



Allicin and Vitamin C
Power, Performance, Proof

By Peter Josling

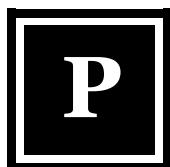
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Cover photograph: Debbie Josling

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Foreward

Throughout history it has been recognised that garlic has the potential to assist the immune system in a number of ways beneficial to our health, including the stimulation of immune cells, the killing of pathogens and the detoxification of carcinogens. Until recently, however, the question has remained, how could we harness the special powers that the herb has long been suspected of possessing?

Its use in cooking is widely thought to be health-giving, and indeed certainly is to some extent, but mostly due to the range of minerals and vitamins that it contains. Garlic can, of course, be eaten raw, although most people find its pungent taste and lingering odour on the breath unacceptable. But even if we could munch our way through bunches of cloves, the benefit would still be far less than what we know to be possible.

Many people select a garlic supplement from the wide range available. But as we'll see later, in only a very few cases are they likely to find a product which provides even minor benefit. What's for sure is that they won't gain the true benefit that is possible. This seems a little strange. If garlic is so special, how is it that it appears to fall short of delivering its full potential? The answer is that the key active constituent, allicin, is a highly elusive and short-lived substance. In this book you'll discover how garlic produces allicin, a sulphur-based compound with exceptional antimicrobial properties, for its own highly-specialised purpose and how the compound quickly breaks down.

“Only recently has it been possible to produce stabilised allicin on a commercial scale”

Only recently, decades after allicin was first identified in the laboratory, has it been possible to produce a stabilised form on a

commercial scale. A team of chemists and chemical process engineers have pioneered and patented the unique process of water-based extraction and freeze-drying that made this possible.

This milestone achievement has now enabled researchers to explore allicin's potential more fully and freely, to confirm the most incredible spectrum of activity not only against a host of common ailments, but also against today's most pressing problems – resistant bacteria, virus and fungal infections. You'll also read how such micro-organisms could even yet prove to be the scourge of modern man, how diseases that mankind thought had been eradicated with the widespread use of antibiotic drugs are regaining footholds, and how important allicin is expected to become in the future.

“The availability of stable allicin means that the full benefits of garlic are available to the public”

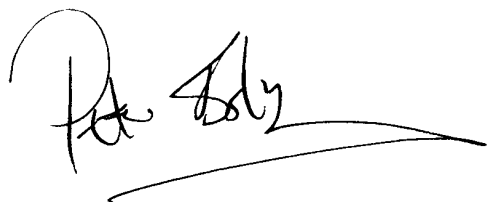
Most importantly, the availability of stable allicin, produced in powder, liquid and creme form, means that at last the full benefits of garlic are available to the human and animal population. Later in this book you can read how allicin is active against an astonishingly wide spectrum of common and rarer conditions, and how you can use it to fight and guard against these. The addition of ginger gives more benefits.

Do please remember that before following any of the suggested uses for allicin in this book, you give due consideration to any health problems you have and refer to a general practitioner or physician for advice.

Allicin is Nature's antibiotic, antifungal and antiviral. I believe it has the potential to change the course of history. Provided people can get hold of it in whatever form is best for them, allicin has the capability to improve and even save lives.

I will give you a guarantee: Even if you are relatively fit and healthy with no other complicating diseases, you will notice a

difference when you start taking real stabilised allicin products. Within three weeks you will feel different, you may be detoxing your system and you will experience an improvement in your general health, well-being and resistance to disease.

A handwritten signature in black ink, appearing to read 'Peter Josling', with a long horizontal flourish underneath.

**Peter Josling, Director
The Garlic Centre
Battle
East Sussex
UK TN33 9DP**

Why add vitamin-C to Allicin?

The active ingredients in found in Alli-C™ have many benefits. They help modulate your immune function, improving antioxidant performance to remove nasty free radicals that oxidise body tissue. Allicin and Vitamin C synergise with each other giving greater benefits working together rather than apart. Vitamin-C adds significant activity and improves hair and nail quality.

Daily Dose

For people with whose immune system functions normally only 1-2 capsules per day is recommended. People with poor immunity or existing diseases may need more- 3-6 capsules should be taken daily in one go or divided doses. Alli-C may be taken in large doses especially if a resistant infection is present. It is perfectly safe to take up to 12 capsules or more in a day if necessary.

Alliderm is used topically and can be used to treat drug resistant infections where antibiotics fail. Wounds start to heal immediately and skin problems begin to resolve with regular use.

Who can use Alli-C?

Alli-C and Alliderm may be safely added to ANY pharmaceutical drug regimen even blood thinners. Anyone over the age of 7 can take the adult dose. Youngsters should half dose.



Alli-C and Alliderm are Nature's Healers

Allicin is the most potent antibacterial and antifungal substance in garlic, but under normal circumstances is extremely unstable. Only recently, decades after allicin was first identified in the laboratory, has it been possible to produce a stabilised form on a commercial scale. Peter Josling, director of the the Garlic Information Centre in East Sussex, together with a team of chemists and chemical process engineers have pioneered and patented the unique process of water-based extraction and freeze-drying that has made this possible.

This process is finally allowing researchers to explore allicin's potential more fully, to confirm its spectrum of activity, not only in helping to maintain a healthy cholesterol level, but also against today's most pressing problems – resistant bacteria, virus and fungal infections.

In relation to reducing heart disease, proven pharmacological activities of allicin include lowering high blood cholesterol, thinning the blood and reducing blood pressure. However, the addition of vitamin c has only recently been made available and is unique to Garlic Rx Inc. This combination is a powerful cleanser and healer that can kill off a wide variety of pathogens and parasites when ingested. Now with the addition of a gel formula these products can really help many people.

Various studies have demonstrated that garlic powder with allicin-releasing potential may have value in mild to moderate cases of high cholesterol when combined with a low fat diet. In other studies, treatment with stabilised allicin as the major ingredient have shown a significantly greater reduction in total cholesterol and LDL cholesterol than placebo. Trials with stabilized allicin and vitamin C in patients with heart disease are underway, as are studies looking at antimicrobial activity.

Peter Josling in this book shows how allicin is made and why the addition of vitamin C and bioflavonoids improves the activity and increses the benefits seen in patirents. Vitamin C is well known for preventing and treating colds and flue as well as improving skin, hair and nails making Alli-C a very versatile product suitable for everyone.

The majority of this book shows how incredible stabilized allicin is but the addition of vitamin c makes Alli-C more effective as a remedy for all manner of ailments and very well tolerated.

With the advent of Alliderm it is possible to treat almost any type of skin condition ranging from acne to warts. Now Alliderm gel allows stabilized allicin to be used topically and is extremely easy and pleasant to use. Ideal for bites, stings or cuts as well as healing infected wounds.

These two agents should be part of everyone's First Aid Cabinet and taken everywhere to help prevent and treat everyday conditions as well as chronic disease. This book will give you a simple guide as to how to use, how much to take and how long to continue.

Part One

A history of garlic, the source of allicin

To appreciate the importance of allicin it is first useful to appreciate the historical significance of garlic. Of all the plants used in cooking and natural medicine, it must be the best known and most widely used. This is not surprising given that its reputation as an “all-healing” herb has been solidly established over thousands of years.

“Garlic has established a reputation as an all-healing herb”

The use of garlic, the plant that is the source of the versatile ingredient and valuable, restorative medicine, dates from Egyptian times. It was also popular with the Babylonians and the Hebrews. The great pyramid at Giza in Egypt bears an inscription indicating how much garlic and onion was consumed by the workers who built the pyramids. Indeed, it is reported that garlic was the cause of the first known industrial strike, caused when the ruling Egyptians stopped the daily ration of garlic given to the construction teams to ward off disease and build their strength. The men immediately downed tools and refused to continue their labours until rations were restored!

The Egyptians often left clay models of garlic in ordinary graves. However its powers seem to have been acknowledged at all levels of society for, during Howard Carter’s 1922 excavations, six carefully-positioned bulbs were found in Tutankhamen’s tomb – probably to ward off evil spirits. Clearly the Egyptians were familiar with the power of garlic. According to records, they were renowned for growing large tonnages of grain from which enormous amounts of bread were baked – the staple part of an average diet in those days.

Unfortunately, this could often lead to problems with tooth decay. Milled flour often contained grains of silica from the sandstone mill wheels and this frequently led to premature wear of the enamel and tooth decay. The only remedy was to use the pungent qualities of garlic, ground to a paste, and apply it straight to the aching tooth! This rather hot climate was also infested with mosquitoes and other biting insects, many of which carried malaria and other infectious diseases. Once again it was garlic that came to the rescue – as an effective insect repellent.

Garlic has been established as a medicine for thousands of years and was well recognised by the Egyptians, Babylonians, Ancient Greeks, Chinese, Vikings, Indians and Romans.

BOTANICAL BACKGROUND

As time moved on, the uses of garlic in medicine flourished and many great physicians and philosophers made reference to its benefits. Hippocrates, Homer, Aristotle, Pliny, Galen, Virgil and Mohammed all believed garlic to have many useful properties. The Greek and Roman armies were, like the Egyptian workers, fed garlic to build strength, and the first Olympian athletes consumed vast quantities before competitions to build stamina and keep themselves free from illness. It was thought to be food fit for a god or goddess, and was placed ceremoniously on piles of stones at crossroads for the Greek goddess Hecate.

Ever since, garlic has been used by the dominant cultures around the world. Nowhere more so than in China, where garlic has always been used in both cooking and medicine. The Chinese call garlic "suan". The fact that this is written as a single sign in such an ancient language indicates a very early cultural recognition. Traditionally, the Chinese used garlic as an aid to long life as it was known both as a "healing" and a "heating" herb, which helped the circulation and was

believed to be beneficial in cases of tumours, tuberculosis, coughs, colds, infections and wound healing.

The Romans introduced garlic to Britain and it was later to be grown in monastery gardens. By the Middle Ages, garlic was well established although not necessarily loved by all! It was around this time that legends emerged about its magical properties and renowned ability to ward off evil spirits, in particular vampires! The long pointed leaves are thought to have given rise to the name "gar", meaning spear or lance in Old English and "leac" meaning leek or potherb or vegetable. The natural origins of garlic lie in the steppes of Central Asia, where the plant grows wild. Other wild varieties grow around the world, usually in wooded areas. A member of the lily family (*Liliaceae*) garlic's botanical name is *Allium Sativum* (the cultivated variety). Other close members of the family include the onion (*Allium Cepa*), chives (*Allium schoenoprasum*), the leek (*Allium porrum*) and the shallot (*Allium ascalonium*). More distantly related are the autumn crocus, bluebell, aloe vera and lily of the valley. Of all the alliums, garlic is the most potent and best known for its culinary benefits and numerous medical uses.

“Chinese believed garlic to be beneficial in the cases of tumours, infections and wound healing”

Also commonly grown in Elizabethan country gardens during the 16th century, garlic became known as peasant's food. In those days the odour was considered offensive and was not greatly beloved of the middle and upper classes. At about this time, garlic acquired the country name of Poor Man's Treacle, which came from a Greek word for "antidote", which in Latin was "theiracus". It was also commonly known as Devil's Posy and Witch Poison, doubtless due to its reputation for fighting off evil. Another name that became

synonymous with garlic was "camphor of the poor", after its strong odour.

More recently, two world wars saw attitudes move greatly in garlic's favour. During the First World War, the British Government offered farmers throughout the UK a shilling a pound to grow the plant. This was because its medicinal properties were being used to fight off dysentery and as an aid to healing and the prevention of bacterial infection in wounded soldiers. In the Second World War garlic was again used extensively for its antibiotic qualities.

Aqueous garlic extracts contain plenty of beneficial sulphur that can unlock the full potential of plants and soil when used as a bio-stimulant, allowing maximum plant-feeding efficiency and helping to prevent insect attack as well. The table below clearly shows aqueous-based extracts like stabilised allicin release a lot more sulphur than oil-based alternatives.

*Thiosulphinate concentrations in
extracts using different carriers*

Water	22.46
Saline	17.46
Cod liver oil	2.27
Rapeseed oil	0.95
Paraffin	1.03

What is allicin and what are its medicinal benefits?

Garlic is remarkable for the number of compounds it contains, including seventeen amino acids, at least 33 sulphur compounds, eight minerals (germanium, calcium, copper, iron, potassium, magnesium, selenium and zinc) and the vitamins A, B₁ and C. It also comprises fibre and water but not a single trace of allicin, the wonder compound that this book is about. How can this be? It's a story of how a plant has evolved to protect itself from attack by microbes in the soil, and here's how it goes:

ALLIIN AND ALLINASE – THE DYNAMIC DUO

In 1944 an Italian chemist, C. J. Cavallito, first isolated an unstable, odorous sulphur-containing compound with antibacterial properties from extracts of fresh garlic. He called the substance allicin (al-e-sin), after the generic name for the plant *Allium Sativum*.

Four years later researchers Stoll and Seebeck, also working with garlic, discovered an odourless sulphur-containing compound called alliin (al-e-eeen). This they found to be converted by a second garlic constituent, an enzyme called allinase (al-i-naze), to form allicin. The researchers made an additional, remarkable discovery: When they studied the cloves in cross-section they found that alliin and allinase were stored in different compartments. In an undamaged clove they remained completely separate, but once its structure was ruptured – typically by cutting – the two substances came into contact and formed allicin.

ALLICIN AND ITS MEDICINAL BENEFITS

This transformation is extremely rapid, taking mere seconds. Even more intriguing is the instability of allicin. It remains active only for a short period before degrading.

There must be a reason for this. Nothing in nature exists without a reason. All the clues suggest that garlic possesses a defence mechanism against attack from the soil-borne organisms. It has been found that invasion of growing garlic cloves by fungi and other soil pathogens causes the alliin and allinase to react, rapidly producing localised bursts of allicin which deactivates the invaders. This ability underlies the exceptional capacity of allicin to kill unwanted organisms, about which you will read more later. There is a good reason why the highly reactive allicin molecules have such a short working life. If they didn't they would continue to react with surrounding proteins, including the allinase enzyme itself, and this would use-up the garlic's protection, which it might need later.

“The exceptional capacity of allicin to kill unwanted organisms is unique in a herbal compound”

This extremely efficient binary chemical mechanism ensures that the clove's defence is highly localised and short-lived – just sufficient to repel an attack. The remaining alliin and allinase are held in reserve to fight off any subsequent attacks. While this is good for the well-being of a garlic crop, it poses distinct problems for anyone trying to extract and isolate the key active ingredient in a way that is beneficial. It was five decades after its initial discovery that allicin would be isolated in a stabilised form for the first time.

MOTHER AND OFFSPRING

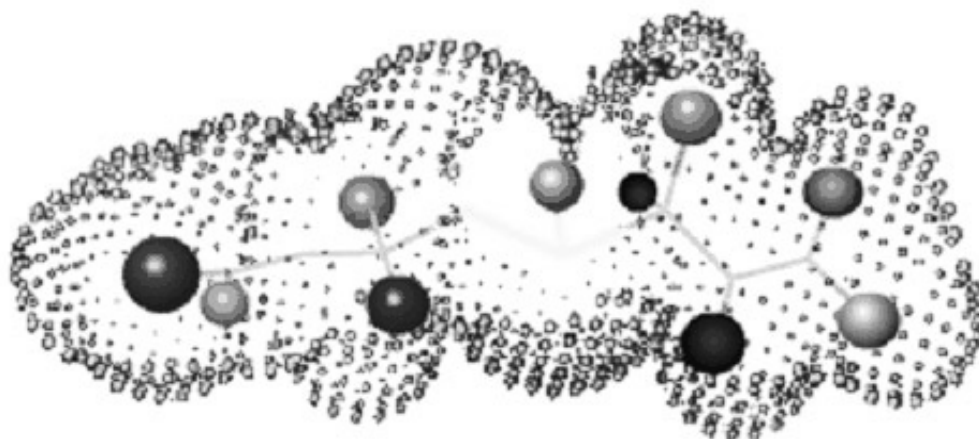
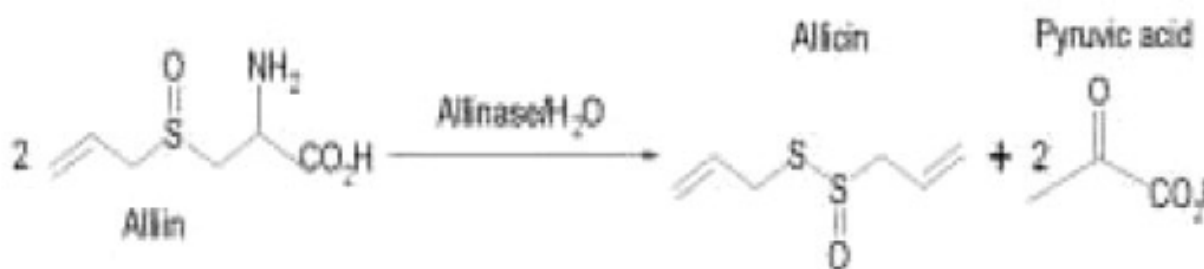
When allicin degrades, as many as 200 other sulphur compounds are formed. Many of these, like allicin, are transitory in nature while others endure. One is a compound named ajoene (ah-ho-ene) after "ajo", the Spanish for garlic, which has been shown to possess antithrombotic, antimycotic (it kills fungal infections) and anti-fat-depositing actions. Others that have attracted scientific interest across

a wide spectrum of disease conditions have only been used in experiments on animals or on human cell models in the laboratory. These include diallyldisulphide (DADS) and diallyltrisulphide (DATS).

Thus allicin can be regarded as the "mother substance" from which all others flow. Raw garlic degrades into allicin to a greater or lesser extent and then many "sons and daughters" of allicin form, some of which have beneficial effects on the body and some which do not.

SO WHAT IS ALLICIN?

In the opaque terminology of the biochemist, allicin is described as diallyl thiosulphinat, allyl sulphide or even S-(2-Propenyl) 2-propene-1-sulphinothioate. What is more important to recognise is the most crucial and reactive part of the allicin molecule – the sulphur-sulphur bond coupled to an atom of oxygen.



“Highly reactive configuration gives allicin its remarkable antibiotic properties, particularly the potential to assist the immune system”

Chemists know that this configuration is highly reactive, giving allicin its remarkable antibiotic properties and, in particular, the potential to assist the immune system in a number of important ways, including stimulating immune cells, killing pathogens and detoxifying carcinogens. Before the advent of pharmaceutical antibiotics, crushed aqueous garlic extracts were used to treat a wide range of infectious disease, including dysentery, typhoid, cholera, smallpox and tuberculosis. Then, in the 1930s, the first class of antibiotic drugs was invented – the sulphonamides. The reason they were so successful was the presence of the reactive sulphur group – exactly the same group that allicin contains.

HOW DOES ALLICIN WORK?

Because allicin is “so keen”, in biochemical terms, to react with micro-organisms, it is able to penetrate their cell walls. In doing so it is then able to upset their biochemical balance and impede their activity. At low concentrations of allicin, the degree of interference may not be lethal, but sufficient to block the microbe’s virulence. At slightly higher concentrations, the effect can prove lethal for the micro-organism (see later for more details).

Allicin Facts

Do conventional garlic supplements work?

A quite bewildering array of garlic supplements are on offer when visiting a health-food shop or drug store, all apparently offering you allicin. However, in a review of garlic supplement brands carried out in March 2003, the independent consumer body ConsumerLabs.com found that the strength of these products, judged on each product's ability to generate allicin in a laboratory test, varies by as much as 1500 per cent. ConsumerLabs.com found that almost a quarter of non-aged products (aged garlic never produces any allicin) yielded less allicin than was generally considered therapeutic and then only in a laboratory and not in your body, which is an altogether different setting.

The global consumption of garlic per year is approximately 1 clove for every living person! In the UK alone more than two million packs of garlic supplements were purchased in 2005/2006 from chemists, supermarkets and mass-merchandisers to treat elevated cholesterol, hypertension and other common disorders. This makes garlic the most popular herbal product according to many sources. Yet NONE of those consumers are getting what they actually need from a garlic product – *that all-important heal-all, allicin.*

Why? As we've seen, allicin is created when a garlic clove is ruptured, by the action of two constituents in a defence against attacking soil organisms. But just as allicin is produced in a matter of seconds, its potency dies away with equal rapidity. In its natural, unstabilised form, it rapidly degrades and is simply not available as an active substance for the benefit of humans. In short, without allicin in its stabilised form, these supplements have little, and mostly no allicin potential. This is confirmed by the total lack of any clinical evidence for any activity as an antimicrobial agent.

Consider the ConsumerLabs.com study in a little more detail. Thirteen non-aged garlic products and one aged product were purchased and tested. The amount of allicin produced by the non-aged garlic products ranged by a factor of 15-fold in the laboratory dish, which bears no relation to the environment of the human body. There's clearly no consistency of quality. Ironically, a product with one of the lowest allicin yields per gram of garlic claimed to be "allicin rich." Several products produced nowhere near the amount of allicin the manufacturer claimed.

“It is impossible for a consumer to know for sure how strong a garlic product is without testing it”

Tod Cooperman MD, President of ConsumerLabs.com

Few products clearly state their allicin yield and, when they do, they are not always accurate. The important word in these statements is "yield". This is purely a theoretical amount and in the human body this just does not happen. The reason why is that our gastric acids deactivate allinase, the allicin-producing enzyme. It is estimated by garlic experts such as Dr Larry Lawson and Professor Eric Block, as well as my own research group, that every time you swallow a typical garlic powder product, 95 per cent of it will never become active and you will get virtually nothing from it. Check exactly how much garlic is contained in your supplement, as some are virtually 'garlic-free'. Ask if the product has any published clinical evidence. A recent paper in the Journal of Agricultural Food Science by Lawson and Wang showed that most garlic supplements are standardised on allicin potential and are enteric-coated to prevent the action of gastric acid. To determine whether these products release the claimed amount of allicin under simulated gastrointestinal conditions (found in your gut), a standard method for drug release was applied to all 24 known

brands of enteric-coated tablets. While all brands employed effective coatings and met their claims for allicin potential when crushed and suspended in water, 83 per cent of them released less than 15 per cent of their potential dissolution allicin release. Only when tablets had high allinase activity and disintegrated rapidly did they show high allicin release. Crucially the researchers concluded that garlic powder supplements should no longer be standardised on allicin potential, but rather on dissolution allicin release. Further evidence was published in the same journal by two researchers from The Department of Chemistry at the University of California. They analysed a large number of commercially available garlic products and concluded that the amount of allicin available from these products, when analysed in gastric or intestinal fluid, was less than one part per million (ppm). This compares with the guaranteed 100 per cent yield of at least 250ppm allicin from the true “allicin-containing” products that are now coming to market. Independent research confirms that many garlic supplements cannot provide ANY of the garlic’s active principal, allicin.

What all this boils down to is that there really is no comparison between the general body of allicin-claiming products and the allicin-containing products that are now being introduced to consumers worldwide. Some garlic powder tablet preparations do have the ability to generate tiny quantities of allicin, and therefore all the beneficial sulphur compounds that come from allicin will also be present. But, as we have seen, the actual amount of allicin your body receives from these products is minute. This is why there is absolutely NO DATA published on these products to show any anti-microbial activity, and even recent studies on cardiovascular activity have failed to confirm the promise that early studies showed.

What about raw garlic?

Eating raw garlic, which itself varies quite widely in its relative yield of allicin, is hardly an option, given the social consequences and more technically, the deactivating effect of stomach acid on the allinase. In any case scientists have found that the amount of allicin released from different garlicks around the world can vary by as much as 10 times, and given that the best yield is about a 4% allicin yield, you'd have to munch an awful lot of garlic!

Or garlic oil?

Results of independent analysis from the Camden Food and Drink Research Association and the prestigious Warren Springs Laboratory show that garlic oil does not provide allicin. This is because it is destroyed by the boiling process used in the oil's manufacture. However, it is fair to say that some oil-based products do contain potentially beneficial sulphur compounds due to high levels of concentration and they may help various circulatory disorders.

COMPARISON OF GARLIC PRODUCTS

Oil or water?

The method of extracting active sulphur chemicals from garlic is particularly important. Extraction using an oil seals up the activity of the sulphur compounds so that they will not readily be available to the body. Consequently, any activity is severely diminished. Water-based extracts (like real allicin) are MUCH more active. This is the main reason why we see such good results against bacterial infections from allicin and ALL the other active thiosulphinates that allicin breaks down into. Products of water-based extraction methods are able to kill bacteria even when they are diluted 20-30 times more than oil-based extracts. So if you want to produce an extract from fresh garlic that actually works microbiologically, you have to use water as an extraction medium. The maximum amount of allicin is created. What's

more, the allicin is removed from the reaction so it won't interfere with the continuing action of the allinase enzyme.

Finally, to prove its effectiveness, every batch of allicin produced is microbiologically tested against a multi-drug-resistant strain of bacteria. Clearly the mainstream garlic extracts are simply not in the same league as the allicin-containing products now on offer. With the advent of new technology, one can now produce and stabilise allicin – the heart of garlic. This means that for the first time ever, anywhere in the world, we have the mother substance from fresh garlic ready to prevent and treat a wide range of common ailments. The next chapter details many conditions where allicin and ginger can really help you.

Type of supplement	Fresh garlic source declared on pack?	Process to manufacture supplement	Allicin potential	Published data on antibacterial activity
Garlic Oil	No	Steam distillation	No	No
Aged Garlic	No	Aged over 2 years	No	No
Garlic Macerates	No	Crushed and dried cloves	No	No
Garlic Powder	Sometimes	Cloves chopped and dried under pressure and controlled temperature	Possibly but easily deactivated by human stomach acid	No
Allicin powder extracts	No	Specialised patented process produces stable liquid allicin which is then freeze-dried	100% yield guaranteed as this extract IS real allicin	Yes especially on drug-resistant species

Types of garlic supplement found on health-food stores, drug stores and supermarket shelves

THE MICROBIOLOGY OF STABILISED ALLICIN

There are four main characteristics that determine how effective an antibiotic will be. Allicin is known as 'Nature's antibiotic' and

recent work has shown that stabilised allicin has all the required characteristics to make a modern antibiotic capable of killing even the most drug-resistant species of bacteria, including MRSA, MDRTB and PRSP. The four key characteristics are:

Selectivity - Clinically effective antimicrobial agents all exhibit selective toxicity toward the bacterium rather than the host. It is this characteristic that distinguishes antibiotics from disinfectants. The basis for selectivity will vary depending on the particular antibiotic. When selectivity is high the antibiotics are normally not toxic. However, even highly selective antibiotics can have side-effects.

Therapeutic Index - The therapeutic index is defined as the ratio of the dose toxic to the host to the effective therapeutic dose. The higher the therapeutic index the better the antibiotic.

Categories of Antibiotics - Antibiotics are categorized as **bactericidal** if they kill the susceptible bacteria or **bacteriostatic** if they reversibly inhibit the growth of bacteria. In general the use of bactericidal antibiotics is preferred but many factors may dictate the use of a bacteriostatic antibiotic. When a bacteriostatic antibiotic is used, the duration of therapy must be sufficient to allow cellular and humoral defence mechanisms to eradicate the bacteria. If, possible bactericidal antibiotics should be used to treat infections of the endocardium or the meninges. Host defences are relatively ineffective in these sites and the dangers imposed by such infections require prompt eradication of the organisms.

Antibiotic Susceptibility Testing - The basic quantitative measures of the *in vitro* activity of antibiotics are the **minimum inhibitory concentration (MIC)** and the **minimum bactericidal concentration (MBC)**. The MIC is the lowest concentration of the antibiotic that results in inhibition of visible growth (*i.e.* colonies on a

plate or turbidity in broth culture) under standard conditions. The MBC is the lowest concentration of the antibiotic that kills 99.9% of the original *inoculum* in a given time.

For an antibiotic to be effective, the MIC or MBC must be able to be achieved at the site of the infection. The pharmacological absorption and distribution of the antibiotic will influence the dose, route and frequency of administration of the antibiotic in order to achieve an effective dose at the site of infection.

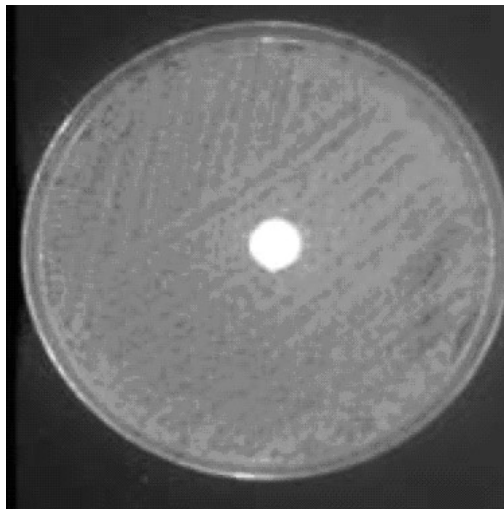
In clinical laboratories a more common test for antibiotic susceptibility is a disk diffusion test. In this test, the bacterial isolate is inoculated uniformly onto the surface of an agar plate. A filter disk impregnated with a standard amount of an antibiotic is applied to the surface of the plate and the antibiotic is allowed to diffuse into the adjacent medium. The result is a gradient of antibiotic surrounding the disk. Following incubation, a bacterial lawn appears on the plate. Zones of inhibition of bacterial growth may be present around the antibiotic disk. The size of the zone of inhibition is dependent on the diffusion rate of the antibiotic, the degree of sensitivity of the micro-organism, and the growth rate of the bacterium. The zone of inhibition in the disk diffusion test is inversely related to the MIC.

The test is performed under standardized conditions and standard zones of inhibition have been established for each antibiotic. If the zone of inhibition is equal to or greater than the standard, the organism is considered to be sensitive to the antibiotic. If the zone of inhibition is less than the standard, the organism is considered to be resistant.

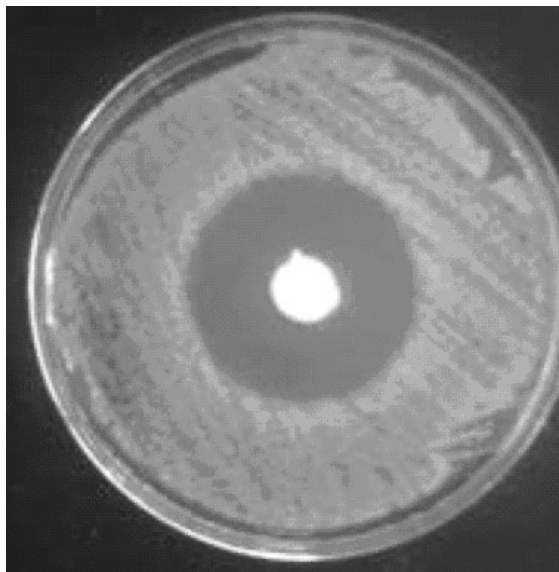
Combination Therapy - Combination therapy with two or more antibiotics is used in special cases: (1) to prevent the emergence of resistant strains, (2) to treat emergency cases during the period when

an etiological diagnosis is still in progress, and (3) to take advantage of antibiotic synergism.

Antibiotic synergism occurs when the effects of a combination of antibiotics is greater than the sum of the effects of the individual antibiotics. **Antibiotic antagonism** occurs when one antibiotic, usually the one with the least effect, interferes with the effects of another antibiotic.



Pharmaceutical antibiotic creme Mupirocin placed on a plate of MRSA bacteria shows no killing capability because the bacteria are resistant



A sample of allicin placed on a similar plate shows significant killing activity represented by a large zone of inhibition



A similar plate of MRSA bacteria but with allicin liquid as the test substance, which again shows a highly significant zone of inhibition. Every batch of liquid and powdered allicin produced is routinely assayed against this drug-resistant bacteria to prove the formulations are biologically active and can remove infection



This is an allicin formulation measured against a pharmaceutical drug called Vancomycin. This shows that the allicin formula actually kills these MRSA bacteria much more effectively than the drug, as indicated by the comparative zone sizes. Allicin on the left and vancomycin on the right.

Part Two

An A to Z of ailments that allicin can be used to treat

THE EXERCISE OF CARE IN SELF-TREATMENT

Although not a contra-indication, taking too much garlic can prevent blood clotting quickly and it would be sensible for people already on anticoagulants or those about to undergo surgery to advise their medical team before starting therapy with ANY garlic supplement. Garlic can also cause reactions in people who are allergic, but this is usually mild and will disappear when you stop eating garlic. After an operation is over it will usually be very sensible to start with Alli-C powder capsules as you will need to keep your blood thin and vigorously travelling around your circulatory system.

Because most people on the planet have already been exposed to garlic it is unlikely that anyone will be sensitive to any allicin formulation – if however this does occur then simply stop the treatment. Garlic extracts have been used as medicines for thousands of years and the spectrum of conditions treated successfully is very wide indeed. The herb quickly became established as a cleanser of the body, a mild diuretic, a remover of poisons and a healer of wounds and sores. There is growing scientific evidence, including more than 1,500 clinical papers where activity has been proven, that allicin, the key garlic derivative, is the driving force behind a wide range of treatments and preventatives. The following A to Z covers the commonest problems which can concern us on a day-to-day basis, with a suggested treatment regimen using stabilised allicin formulations. Alli-C capsules are very well tolerated by most people .

ACNE

Medical definition

Acne vulgaris is a common inflammatory disorder of the sebaceous glands characterised by the presence of blackheads with papules, pustules and in more severe cases – cysts and scars. Although the actual cause is still unknown, many physicians believe acne is an infection. In particular *Staphylococcus*, *Streptococcus* and *Candida albicans* can infect tiny oil-secreting sebaceous glands found in large numbers on the face, upper back and chest. This leads to a worsening of clinical symptoms, making treatment difficult. Allicin powder capsules and allicin liquid both routinely kill *Staphylococcus aureus*, *Streptococcus* species and *Candida albicans*. Their mild natural acidity is a big advantage as an acidic pH has been shown to be protective and to guard against bacterial overgrowth. Thirdly, allicin liquid helps dry the skin quickly which, in turn, helps shrink swollen lesions and assist in their removal. It also helps to pay attention to diet. Certain foods, especially sugar, caffeine, cocoa, refined vegetable oils and various preservatives, can aggravate the condition.

Treatment regimen

Take 2-6 (up to 1000 mg stabilised allicin powder) capsules every day for at least 4 weeks. At the same time use a few dabs of allicin gel applied directly to each pimple and, if you can, add a little more gel to the soap or cleanser you use each day. With regular use of allicin gel and capsules significant results can be expected within 2-4 weeks. At this stage you can reduce the dose of capsules to a maintenance dose of just one capsule each day. This is important to remember as it will help you develop a degree of protection against a further bacterial overgrowth.

ANIMAL BITES

Medical definition

Bites from pets are remarkably common, followed by bites from wild species and even humans. Any bite opens the victim up to any infectious organisms, which may be present. A bite means that it is easy for microbes to get directly into the blood and surrounding tissue. Because of this many physicians refuse to suture an animal bite since this would effectively seal the infection in. The result can be poor wound-healing as well as the continued potential for infection. In this situation allicin gel can kill a wide range of invasive organisms. Anyone prone to bites because of their surroundings or job can take allicin powder capsules to maintain a year-round background resistance to infection.

Treatment regimen

After you have washed the wound, thoroughly squeeze in a generous supply of Alliderm gel. This may sting a little but don't be afraid to persevere. Continue this 2-3 times a day for at least a week. The wound should begin to heal quickly. At the same time take 2-3 Alli-C powder capsules (540 mg) daily for a period of about 6 weeks to make sure you have sufficient allicin in your bloodstream to remove any pathogens that may be present.

Testimonial

'I have used allicin formulas for treating a bite from a small dog as described above. It seemed to work very quickly and the pain was reduced in a few hours. I have continued to take the capsules and the wound has now healed.' - Mr DS, Bexhill-on-Sea

ARTHRITIS

Medical definition

Although arthritis literally means 'joint inflammation', anyone who has one of its many forms or related conditions knows the

condition often extends far beyond bones and cartilage. Examples are Sjögren's Syndrome, Psoriasis and Irritable Bowel Syndrome. By some estimates, as many as 70 per cent of people with Fibromyalgia have symptoms of Irritable Bowel Syndrome (IBS) - abdominal pain and bloating along with constipation or diarrhoea or alternating bouts of the two.

In the Middle Ages, herbalists commonly recommended crushing up fresh garlic into a piece of muslin and winding it around an arthritic joint. This was to ease the pain and help reduce the swelling. Today we find that Alli-C combined with ginger is an ideal combination to take orally to help ease the misery of rheumatoid arthritis. Ginger can help to relieve the pain associated with rheumatoid arthritis due to its anti-inflammatory effects. It also has a warming effect on the body, which helps to relieve symptoms. The gingerols found in ginger contribute to its stimulating properties and heat-promoting effects.

Treatment regimen

Take 2 Alli-C capsules with ginger 3 times a day either in addition to current medication or alone. The active ingredients will quickly get absorbed into the joints and help improve mobility. This is a treatment that needs to be continued long-term. Dose may be reduced to 2 per day.

ASTHMA

Medical definition

Widespread narrowing of the bronchial airways, which can change in severity over short periods of time. Symptoms include coughing, wheezing and shortness of breath. Caused by a wide range of allergens in the air, but aggravated by exertion, infection or stressful emotion. The incidence of asthma is reaching almost epidemic levels. Not only are the death rates increasing but there appears to be no respite as we consistently challenge our body with poor diet,

environmental toxins, excessive use of drugs and the threat from bacterial attack. It is also well known that simple infections like the common cold, coughs and sore throats can trigger an attack. Allicin can prevent and treat the common cold, coughs, sore throats and a wide range of bacterial, viral and fungal disease that can trigger classic asthma symptoms.

Treatment regimen

Take 1 to 4 Alli-C powder capsules or about 1080 mg every day and double this dose at times when you can predict an asthma attack coming on.

ATHLETE'S FOOT

Medical definition

This is a fungal infection of the skin, the scalp or the nails. Caused by the dermatophyte fungi – *Trichophyton Epidermatophyton*. Its presence in animals is often a source of infection for man. The infection can be spread by direct contact or via infected materials, resulting in lesions that are often ring-like and may cause intense itching. The commonest form is Athlete's Foot, which affects the skin between the toes. Another common type is ringworm of the scalp (*Tinea Capitis*) of which there is a severe form. Ringworm also affects the groin and thighs (*Tinea Cruris*) also known as Dhobie, or Jock Itch and even the skin under a beard can become infected (*Tinea Barbae*). In research, allicin in low concentration was effective against laboratory samples of *Trichophyton*, *Epidermatophyton*, and *Microsporum*. Allicin inhibits both germination and growth.

Treatment regimen

Simply apply a generous amount of Alliderm gel between the toes and gently rub into the skin This should be done twice daily for 2 to 4 weeks. Within a few hours the itchiness will subside and if it returns, another application should be made. For faster results always

take at least 2 capsules per day as well. Once the cracking has begun to heal, patients should continue with capsules to act as a preventative against recurrent infections. As an alternative, some people prefer to break open capsules and simply rub the powder over the affected area.

Testimonial

Mr GG from Newcastle, England, started using the allicin gel as a treatment for Athletes Foot in February 2008 and continues to take Alli-C powder capsules each day. 'The results are different to those of other treatments in that it does not dry out the skin but kills the infected tissue. Therefore, the incidence of cracking between the toes is virtually eliminated. The overall time-scale is slightly slower than pharmaceutical drugs but it certainly keeps the complaint at bay. Interestingly, it has not returned in over 9 months, which is very unusual as I often get recurrent infections.'

BED SORES

Medical definition

Ulcerated areas of skin caused by irritation and constant pressure on a part of the body. Healing is prevented by a decreased blood supply. The formation of gangrene is possible and must be avoided. This is an exciting area of research with allicin, since for many years we have known that garlic has two important functions with regard to healing wounds (see later section on wound healing). Not only can you expect to start healing faster, but you will also prevent an infection from developing. Research is currently underway in this area.

Treatment regimen

Apply Alliderm gel to the pressure bandage. Change frequently. Allicin liquid or gel may also be sprayed directly into the wound.

BLADDER INFECTIONS – Cystitis

Medical definition

An inflammation of the urinary bladder usually caused by *Escherichia coli*. It is usually accompanied by pain and burning on passing urine, with increased desire to pass water. A severe infection usually causes a persistent cramp-like pain in the lower abdomen, together with fever.

Because allicin has such a wide spectrum of activity, and our results show a propensity towards drug-resistant bacteria being the easiest to kill, allicin capsules will be worthwhile against *any* microbial infection. Remarkably, allicin can kill *Escherichia coli* at a concentration of just 16 parts per million and we have even seen activity against a deadly strain known as *Escherichia coli* 0157 at just 32 parts per million.

Treatment regimen

Take 3-6 allicin capsules (450 mg – 1080 mg) every day for at least 4 weeks. Any vaginal irritation can be treated with allicin paste mixed thoroughly into plain yoghurt and gently inserted into the vagina. Alternatively it is also possible to impregnate a tampon with allicin liquid and insert in the normal way.

BLOOD PRESSURE

Medical definition

The pressure of the blood against the walls of the arteries. Pressure is highest during systole, when the heart ventricles are contracting (systolic pressure), and lowest during diastole, when the ventricles are relaxing and refilling (diastolic pressure). The normal range of blood pressure varies, although with the typical western diet it tends to increase with age, but a young adult would be expected to have a blood pressure of 120/80 (systolic/diastolic). High blood pressure is described as a 'silent killer'. It can creep up on you without causing

symptoms to trigger a sudden heart attack or stroke. Even if your blood pressure is very high you may feel relatively well and symptom-free. Some people with high blood pressure may feel dizzy and develop a headache. People with hypertension will have high blood pressure reading even while resting. Factors that increase the risk of developing high blood pressure include increasing age, smoking cigarettes, obesity, excessive alcohol intake, a family history of heart disease, lack of exercise and high stress levels. Medical experts reckon that reducing your diastolic blood pressure by as little as 5 units (millimetres of mercury) would decrease your risk of developing coronary heart disease by a massive 16 per cent. Allicin has been shown to significantly reduce both systolic and diastolic blood pressure. Recently the prestigious medical journal, *The Journal of Hypertension*, reported that garlic extracts with an available allicin yield of just 0.6 per cent could reduce systolic blood pressure by 10 per cent and diastolic blood pressure by 6 per cent. The journal went on to say that the potential blood-pressure-lowering effect of this natural plant medicine was of such significance *'that strokes may be reduced by 30 to 40 per cent and coronary heart disease by 20 to 25 per cent'*. We would expect to see both systolic and diastolic blood pressure lower by at least 10 per cent as a result of taking allicin products that can guarantee a genuine 100% yield of allicin. Further studies are underway.

Treatment regimen

While research is still in progress, testimonial statements from people who have experienced significant benefits while taking allicin suggest that you should take between 1 and 6 capsules a day (up to 1200 mg) depending on your current blood pressure reading. Alli-C powder capsules can be taken with any conventional blood pressure medication. There may even be a synergistic activity, which might allow you, under supervision of your physician, to reduce your drug intake.

Testimonial

Mr Steve B from High Wycombe writes: 'Dear Peter, Just a note to let you know that I have been able to stop taking the beta-blocker drug that was causing me so many problems and not really controlling my blood pressure. As you suggested, I started taking 4 Alli-C capsules a day and monitoring my blood pressure reading. After 6 weeks I persuaded my GP to take me off the drug as I was having some personal problems with it! He took my blood pressure again 2 weeks later (whilst only taking the Alli-C) and to our combined delight my blood pressure was basically normal. I have kept taking the capsules you sent me but reduced the dose down to 2 per day and my last BP reading was still normal. Thank you so very much for your help.'

BOILS

Medical definition

A boil or skin abscess is a localised infection deep in the skin. A boil generally starts as a reddened tender area. Over time, the area becomes firm and hard. Eventually the centre of the boil softens and becomes filled with white cells the body sends to fight the infection. This collection of white cells is known as pus. Finally the pus 'forms a head' and drains out through the skin. Boils can occur anywhere in the body and affect people of all ages. Boils may follow a bacterial infection, commonly an infection with bacteria called *Staphylococcus*.

Treatment regimen

When a boil has burst it should be cleaned and allicin gel can be used to impregnate a lint dressing. This should be applied to the area affected and changed every day, and will quickly reduce inflammation and ease pain associated with boils and cysts.

CANDIDIASIS

Medical definition

A common yeast infection found in moist areas of the body. It is especially common in the vagina where it is known as thrush, but it is also found in the mouth and skin folds. On the skin the lesions are bright red with small satellite pustules. In the mouth it appears as white patches on the tongue or inside the cheeks. In the vagina it can produce intense itching and sometimes a thick white discharge. Candida infection can sometimes develop in people who are taking antibiotics or have a poorly functioning immune system. *Candida albicans* is often now resistant to a wide range of pharmaceutical antifungal agents. The form we call thrush is associated with the overgrowth of the yeast *Candida albicans*. Around one in five women carries this yeast in low levels but it can get out of control if anything happens to disrupt the body's defences. This could be caused by stress, low immunity, hormonal changes around your period, the contraceptive pill, pregnancy, diabetes or sex with an infected partner. Symptoms can include: intense itching of the vagina/vulva, constant tiredness, muscular aches and pains, mood swings, thick white discharge, digestive problems and, with oral thrush, white patches in the throat.

Treatment regimen

Start with at least 3-6 capsules or 450 mg to 1080 mg of allicin powder every day, taken all in one go or throughout the day. This will need to be continued for approximately 1 month, depending on how deep-seated the yeast infection is. If you have a discharge then try adding a few drops of Alliderm gel into plain yoghurt and apply internally once or twice a day, again for about 1 month. This will have a cooling and soothing activity and should help remove the itchiness that is so frustrating for many sufferers. Once progress has been made it is important to keep to a healthy diet, free from excessive sugar, and

keep taking a daily dose of just 1 or 2 Alli-C powder capsules. This will help to prevent the infection from returning.

Testimonial

American Jane Jones, 35, lives in Kent, England and has struggled to manage recurring Candida infections since her teens. 'The first time I got thrush I was only 15 and had no idea what it was. I had a white vaginal discharge and terrible itching – I thought it must be something to do with my periods or that I'd caught something from a toilet seat. I kept it to myself for a few months until it became really bad. I finally broke down in tears and told my mum, who took me to a male gynaecologist.

It was an awful experience, as he seemed to think I was sexually active – which I wasn't. It made me feel dirty. As I now know, although thrush can be transferred to a sexual partner, it's not necessarily caused by sex but by an overgrowth of the Candida fungus in the system. After that first time, the thrush kept on coming back. My mum took me to a couple of female doctors who prescribed the same standard medication which was Monostat 7 (I was living in America at the time). This was effective at first but I think I became immune after a while as I had to take it so often. The doctors also gave me the same advice: don't wear tight jeans, tights or synthetic underwear, avoid perfumed bathing products that can irritate the vagina and always use protection if you are sexually active.

The treatments were very focused on the vagina and on curing the symptoms. Nobody ever mentioned dealing with Candida throughout the entire body. A few years later, many of the medications I was using became available over the counter so I didn't have to keep going to the doctor and it became easier to self-treat the condition. But the thrush still kept coming back, so I never felt free of it. I remember getting it badly when I was at university. The discomfort and itching were

sometimes so severe I thought I'd go mad. I used to scratch myself until it hurt because the pain was better than the itching. I didn't confide in anyone about it. In a way I tried to pretend it wasn't there. I was shy around boys, and the boys didn't help my confidence. Whenever I had an outbreak I felt embarrassed and ashamed, even though there was nothing to be ashamed of. But psychologically it does get you down – you start to feel as if it's somehow your fault.

After university I went to live in London and then got married. During this time I started to feel generally tired and unwell. I was still having thrush all the time, but didn't relate the two – my doctor thought I might have glandular fever. I was reading up on the subject at the time and learnt that Candida overgrowth can have more widespread effects on the system, from bloating to chronic fatigue and digestive problems. I started to think that maybe I didn't simply have vaginal thrush; perhaps there was something going on in my whole body. I realised that when the Candida is really bad I don't just have thrush – I feel ill, tired and slow, like I can't think straight. One of the worst things is having no energy. I'm usually quite energetic, so feeling so tired for much of the time is very frustrating. At this time of my life I was so unhappy that I let the Candida get me down. It was as though thrush was taking over my body and I didn't feel like myself any more. I also thought the treatment I'd been having was simply addressing the symptoms of the problem rather than the root causes, and that's why it kept coming back. I decided to consult a nutritional therapist who suggested I follow a strict anti-yeast diet.

I was advised to avoid all fungi and products with fermented ingredients, such as bread, cheese and alcohol. At the same time I was also taking a probiotic supplement, acidophilus, to help maintain my body's "good" bacteria and keep the Candida in check, and natural supplements such as garlic. My diet was something I knew I could control and it was great to be able to do something practical, even

though it was quite hard to stick to. I had to cut out all sugar, which feeds the fungi, so even seemingly "healthy" food such as fruit was out, as well as things you wouldn't think of, such as peanuts, as they contain a naturally occurring fungus. I followed the diet for three months and it helped tremendously. I was symptom-free for about four years. Over that period, I gradually returned to eating normally – enjoying fruit, chocolate and sugary foods. I carried on taking acidophilus tablets regularly but I almost forgot about the Candida.

Then, about two years ago, I went through a stressful time, took two courses of antibiotics and within a couple of months, started to get thrush again. (I now know it can also be associated with stress, low immunity and using antibiotics, which can disrupt the balance of natural flora in the body.) I used Clotrimazole cream and pessaries or Fluconazole tablets and it cleared up. But it started to come back more regularly and became so frequent I went to my GP to check my symptoms weren't connected to anything more serious. I was tested for diabetes and liver disease, which can both be characterised by recurrent thrush, but fortunately I didn't have either. I cut fruit and sugary foods from my diet again and started taking allicin powder capsules and vitamin C.

I'd read about the curative anti-fungal properties of allicin in a book on garlic and found out that *Candida albicans* was one of the most sensitive species. I started on 6 capsules a day for about 4 weeks. At the same time I even tried aromatherapy, which is quite controversial as the treatment involves douching with essential oils and thrush sufferers are normally advised to avoid anything that may cause irritation. But I felt I had nothing to lose. Everything I've tried has had some kind of positive effect, though nothing has managed to keep Candida away for good until recently. It has now been 12 months since I started on allicin capsules and I now take just one a day – this seems

to prevent the infection from returning. My life is now much more settled and I feel fit and healthy for the first time in years.'

CANKER SORES

Medical definition

An open sore in the mouth, which appears as a painful white or yellow ulcer surrounded by a bright red area. A canker sore is benign (not harmful). Canker sores are a common form of mouth ulcer. They usually appear on the inner surface of the cheeks and lips, tongue, soft palate and the base of the gums. They begin with a tingling or burning sensation, followed by a red spot or bump that ulcerates. Canker sores are a sign of poor immunity and they can often develop as a reaction to toxic elements found in a variety of common foodstuffs that we eat. They can be triggered by emotional stress, dietary deficiencies and hormonal changes. They are often difficult to treat and tend to heal rather slowly. Most doctors now believe that they are caused by *Streptococcus* bacteria, which is capable of ulcerating mucous membranes. The cause can also be viral.

Treatment regimen

Dissolve 2 Alli-C powder capsules (540 mg) in a little water and then gargle for approximately 1 minute. Repeat this every hour for about 4 hours, then repeat once daily. You should immediately gain some pain relief and within 1 week your sore should have healed. Then continue to take 1 capsule daily for maintenance.

CELLULITIS

Medical definition

Cellulitis is defined as large-scale inflammation and infection of the connective tissue between adjacent tissues and organs. This is commonly due to bacterial infection by *Streptococci* species and occasionally by *Staphylococci* species. It is important to stop the

infection spreading to the bloodstream as this can lead to serious problems that could require hospitalisation.

Treatment regimen

If the infection is mild and manifests itself on the skin then apply a few drops of allicin gel to each abrasion, twice daily. Supplement this treatment with at least 4 allicin/vitamin-c powder capsules daily and continue this regimen for 14 days. If you have a long-term infection that has not been touched by successive courses of antibiotics then it is important to double the dose of Alli-C powder capsules and stay on this increased dose for at least 3 months. When there is a sign of any improvement, it is possible to reduce the dose to 1-2 capsules a day. Continue to use the allicin gel as a moisturiser.

CHOLESTEROL

Medical definition

A fat-like material present in the blood and in most tissues. Cholesterol is an important constituent of cell membranes and the precursor to many steroid hormones and bile salts. Western dietary intake of cholesterol is approximately 500-1000mg per day. Cholesterol is synthesised in the body from acetate, mainly in the liver and blood concentration should be between 100-300mg/dL. Elevated levels of cholesterol are associated with atheroma and need to be controlled.

Treatment regimen

Take 4-6 capsules of Alli-C each day and persevere for at least 6 weeks. Review your progress and if a reduction is seen continue for a further 6 weeks. Adding in Beta sitosterol is also an excellent idea!

Why add beta-sitosterol foods to stabilised allicin?

Beta-sitosterol is one of hundreds of plant-derived 'sterol' compounds (including sterols and sterolins) that have structural similarity to the cholesterol made in our bodies. The most prevalent

phytosterols in the diet are beta-sitosterol, campesterol and stigmasterol. Plant oils contain the highest concentration of phytosterols - so nuts and seeds contain fairly high levels and all fruits and vegetables generally contain some amount of phytosterols. Perhaps the best way to obtain beta-sitosterol is to eat a diet rich in fruits, vegetables, nuts and seeds (which obviously brings numerous other benefits as well) as well as taking your daily dose of the superior combination of allicin powder and ginger to achieve:

- Immune system support (especially during stress)
- Relieves allergies
- Reduces cancer risk (prostate, breast, colon)
- Anti-inflammatory and pain-relieving activity
- Relieves symptoms of enlarged prostate (benign prostatic hyperplasia, BPH)
- Helps to maintain normal cholesterol levels

Stabilised allicin is a unique extract from fresh garlic and has a number of exciting properties. Only recently, decades after allicin was first identified in the laboratory, has it been possible to produce a stabilised form on a commercial scale. A team of chemists and chemical-process engineers pioneered and patented the unique cool process of water-based extraction and freeze drying that made this possible.

This milestone achievement has finally made it possible for researchers to explore allicin's potential more fully to confirm the most incredible spectrum of activity not only against a host of common ailments, including maintaining a healthy cholesterol level, but also against today's most pressing problems – resistant bacteria, virus and fungal infections. Stabilised allicin has also been proven to have a great deal of synergy with other natural extracts leading to increased efficacy. Watch out for a new product called ALLESTRA.

Beta-sitosterol and bioactive allicin also appear to modulate immune function, inflammation and pain levels through their effects on controlling the production of inflammatory cytokines. This modulation of cytokine production and activity may help control allergies and reduce prostate enlargement.

In terms of immune function, both stabilised allicin and beta-sitosterol have been shown (in humans) to normalize the function of T-helper lymphocytes and natural killer cells following stressful events (such as marathon-running or infection) which normally suppress immune function. In addition to alleviating much of the post-exercise immune suppression that occurs following endurance competitions, beta-sitosterol has also been shown to normalize the ratio of catabolic stress hormones (cortisol) to anabolic (rebuilding) hormones such as DHEA.

In terms of cholesterol control, several human studies have shown that products containing a mixture of phytosterols including beta-sitosterol, campesterol and stigmasterol, consumed for 3-4 weeks, can reduce total and LDL cholesterol concentrations by about 20%. Doses used vary but the general acceptance is that approximately 300mg of sterol complex have been associated with a reduction in total and LDL cholesterol levels of about 5-15% in subjects with elevated cholesterol levels. This is easily achievable by improving your diet.

Long-term safety studies have not been performed on beta-sitosterol as a dietary supplement - but the compound is so widespread in the diet that it is generally regarded as safe. No significant side-effects or drug interactions have been reported in any of the studies investigating beta sitosterol or stabilised allicin. Pharmacological testing of stabilised allicin indicates that at least 500 capsules could be consumed all in one go and would still show no detrimental effects.

Beta-sitosterol has good evidence of effectiveness in treating BPH and as a cholesterol-lowering supplement, again, the evidence for beta-sitosterol is very good. (Becker M, et al *J Pediatrics*, 1993). As an immune-enhancer, allicin has much more evidence of effectiveness, but ginger appears to be quite beneficial in maintaining healthy immune function during periods of heightened stress (such as exercise recovery). As a cancer-preventive agent, the animal and test-tube data for beta-sitosterol and stabilised allicin/ginger is certainly interesting but preliminary, and needs further substantiation in humans.

Why is my cholesterol level important?

Although there have been controversial discussions concerning the significance of high cholesterol levels alone for the incidence of arteriosclerosis (hardening of your coronary arteries), several recent studies clearly show that a correlation exists between the concentration of blood lipids and the narrowing of coronary vessels. Some studies, including the large Framingham study, have revealed a significant correlation between serum cholesterol and the risk for heart disease in both men and women (Castelli, 1988). Furthermore, a major 25-year follow-up study in the United States, Europe and Japan has recently shown that increased serum total cholesterol levels are directly associated with increased coronary heart disease in all cultures (Verschuren et al., 1995).

Cholesterol is a waxy, fatty substance that is present in blood. Cholesterol is necessary for life. It aids in digestion and acts as a precursor for Vitamin D and certain hormones. It is needed in minute amounts. The body manufactures all of the cholesterol it requires.

Excess cholesterol is absorbed into the arterial walls, in the heart and elsewhere in the body causing the build up of layers of plaque that can ultimately lead to blockages. Heart attacks, strokes, and other serious problems often result.

Not all cholesterol is the same. Low-density lipoprotein (LDL-cholesterol) is considered "bad" since it causes plaque to build up in the arteries. High-density lipoprotein (HDL-cholesterol) is referred to as "good" cholesterol since it does the opposite, carrying plaque away from the arterial wall to the liver and out of the body.

This means that epidemiological investigations (population surveys) and clinical studies have established that an elevated serum LDL-cholesterol is a major contributing factor of coronary heart disease. Furthermore, individuals who have very high total cholesterol levels are generally twice as likely to experience a heart attack or a stroke than individuals with a moderate cholesterol level (American Heart Association, 2003).

Diet and lifestyle are the first things that can be changed to help maintain a healthy cholesterol level.

- Eat more fresh fruits and vegetables
- Reduce saturated fat consumption
- Increase exercise levels
- Stop smoking
- Moderate your alcohol consumption
- Reduce stress levels

Both the plant sterols and stabilised allicin are thought to block the absorption of dietary and biliary cholesterol during the normal digestive process in the small intestine. Allicin is also capable of preventing the deposit of bad cholesterol (LDL) into your main arteries by preventing oxidation of naturally produced cholesterol.

Treatment regimen

Entirely natural extracts like Alli-C can take a little longer to work than pharmaceutical drugs because they offer a cascade of benefits to

the whole body. So it is important to persevere with a natural extract for at least 3 months before you assess its effectiveness. Many other benefits to your immune, digestive and cardiovascular systems are possible as well as helping to maintain a healthy cholesterol level. Because naturally derived agents provide a convenient, lactose and fat-free way to supplement a healthy diet at any mealtime with the amounts of beta-sitosterol foods and Alli-C research indicates could be helpful, these are suitable for everyone including vegetarians, people with diabetes, those following a lactose-free or gluten-free diet, and women who are pregnant.

POOR BLOOD CIRCULATION

Medical definition

There are many factors that lead to poor blood circulation, including atherosclerosis, hypertension, coronary artery disease, carotid artery disease, peripheral artery disease and heart disease. The results of these are: angina pectoris (chest pain), limitation of movement, memory loss, stroke, cardiac arrhythmias, myocardial infarctions, congestive heart failure, valvular heart disease and cold hands and feet. There is evidence that allicin may help improve circulation in several ways. By making your blood less likely to clot, allicin can reduce blood platelet aggregation. This means that your blood will become slightly thinner and is less likely to form a clot since the platelets are prevented from sticking together. It has also been reported that allicin can reduce blood thickening. In one study, which looked at capillary blood flow in the nail folds of the hand, allicin was found to increase blood flow by 55 per cent. As soon as you take an allicin capsule your blood immediately thins and becomes more mobile. It will return to normal within about three hours once the active metabolites that allicin breaks down into have done their work and been excreted.

Treatment regimen

Take 1 to 4 capsules (270-1080 mg) every day, especially during the winter months. Alli-C is very good at improving blood circulation.

COLD SORES

Medical definition

Inflammation of the skin or mucus membranes caused by herpes virus, characterised by a collection of small blisters especially on the lips. Herpes simplex virus (HSV 1) causes the common cold sore and HSV-2 is responsible for genital herpes. Both types can cause either genital herpes or cold sores depending on the site of the initial infection. HSV blisters are contagious through skin-to-skin contact and are recurrent in many people. Most people who are afflicted with recurrent cold sores know exactly when an attack is coming. You will get a tingle on the lips and if you take action fast enough with allicin liquid you can prevent that tingle from becoming a full-blown, painful cold sore. Herpes infection arises as a result of some type of toxic insult, which could be stress, infectious illness, food allergies, drug or alcohol abuse, too much sunlight or cold exposure. A significant number of pharmaceutical drugs can also trigger a reaction including, aspirin, Motrin, Indocin, Clinoril and Cardizem. Procardia and cortisone are known to increase the invasive nature of herpes virus.

Treatment regimen

Rub in a little portion of Alliderm gel to the sore spot 2 or 3 times a day and this will prevent it from developing into a serious cold sore. At the same time take 2-4 capsules of Alli-C every day and continue this especially through periods where you might expect to suffer. This protocol should help to prevent the infection from flaring up again. Remission periods will be increased with regular use .

Testimonials

Cold sores are a constant recurring problem that can be removed by using Alliderm when the sore is active and Alli-C to prevent recurrence

‘I have not had any cold sores on my lips since I have started the treatment. One on the tip of my nose and I think that was my husband’s fault, as he had one on his lip. This is the longest time I have experienced being without sore lips, so thank you very much for all your help.’ – Shena P, Portland, Oregon

‘I can always tell when a cold sore is coming as my lip begins to tingle and I know that if I don’t take action immediately in the next few days I will get a terribly ugly and painful cold sore. I was given some of your allicin gel to try and I first applied just a couple of drops when I felt the tingle. To my amazement and delight the expected cold sore did not develop at all. I continued to apply the gel for a few days and although it has a characteristic smell – this disappeared within minutes of application. Thank you very much for a simple, natural and effective treatment for my cold sores.’ – Arthur B, Hastings, East Sussex, England.

COLDS and INFLUENZA

Medical definition

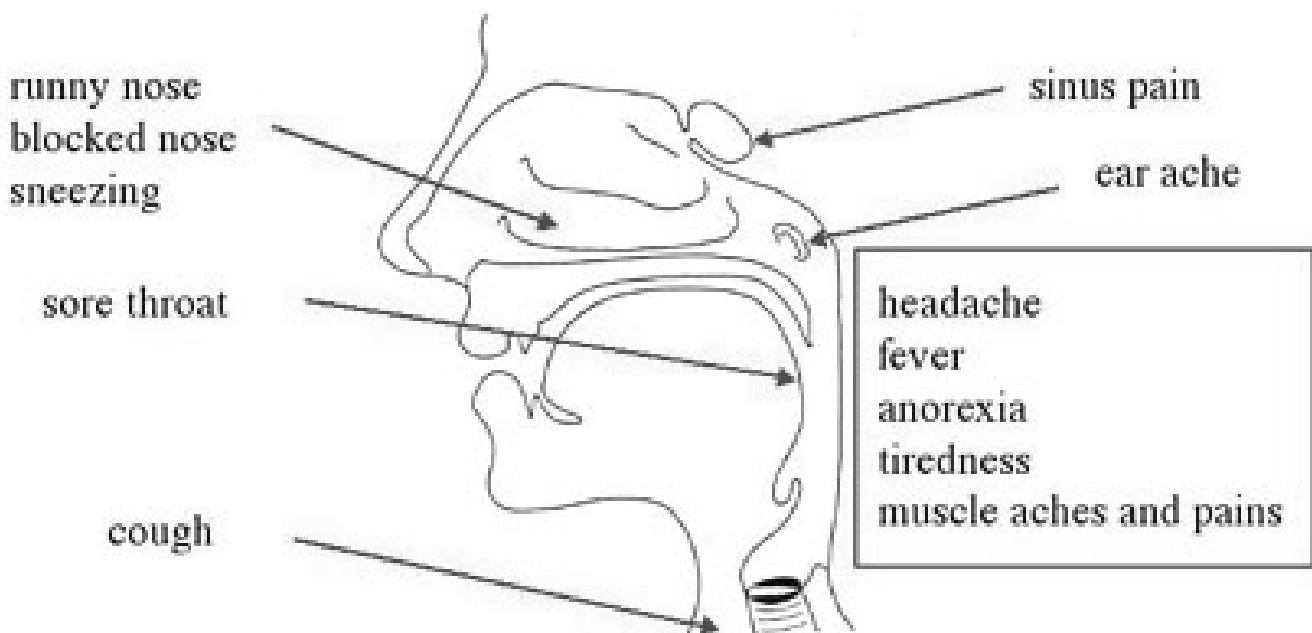
Experts in colds and flu like Professor Ron Eccles, who runs The Common Cold Centre, will confirm that it is very difficult to determine the difference between a bad cold and a mild flu. Classic cold symptoms are headache, fever, malaise, muscle aches and pains, earache, sinus pain, cough, sneezing, runny nose, sore throat and a blocked nose. Influenza is a highly contagious viral infection that affects the respiratory system. Flu viruses are transmitted by coughing and sneezing. Symptoms commence after an incubation period of 1-4 days and include headaches, fever, loss of appetite, weakness, sore throat, sneezing, runny nose and general aches and pains. They may continue for about a week but a few may go on to develop pneumonia – either a primary influenza viral pneumonia or a secondary bacterial pneumonia. The main bacterial organisms responsible for a secondary infection include *Streptococcus pneumoniae*, *Haemophilus influenzae* and

Staphylococcus aureus. All of these bacteria are destroyed by allicin powder capsules.

Testimonials

Mr CP from Rye in Sussex writes: 'When I started a heavy cold I initially took 4 capsules per day for the duration of the cold. The first thing that struck me was that the runny nose cleared up much faster than it would have normally. I continued with 4 a day until the worst of the cold was over. I also noted that the usual aftermath of mucus (which usually hangs about because I smoke) was not as severe and cleared more quickly. From that date I reduced the intake to 1 cap per

Symptoms of common cold



day until I ran out last week! Coincidentally or not the following day, I came down with another heavy cold and unfortunately I did not take any capsules until the end of the week. I immediately took 4 capsules, and have continued until now which is a week from the start. I won't say my cold has cleared but it is much better. I can breathe clearly and the congestion is beginning to clear (loosen). As you know I was very congested on Friday last. The other thing which occurs to me is that I normally feel dreadful when I have a cold for at least 4-5 days, to the

point where I do not feel like doing anything. This time I only felt that bad for two days, i.e. Wednesday and Thursday. However, on Friday and through the weekend my energy levels were good despite the fact that I was still heady from cold. The other side-effect of taking allicin I have found is not one of a laxative but more of a regulariser despite the fact that my dietary habits have not changed. This may be coincidence, I do not know. There can be little doubt that allicin has beneficial effects as I am a firm believer that treatment from within is the best way to combat ailments and if the digestive system is working correctly then the body will do the rest. Incidentally, during this time I have only taken the occasional Paracetamol at night to combat headaches.'

Mr CF from Sheerness, Kent, England writes: 'Dear Peter. On taking allicin powder capsules for the first time I encountered several positive experiences, although my first feelings on day 3 was of being quite nauseous in the stomach, but after this I started to realise a huge "clearing" of the airways, almost a slightly runny/mucus cold. As this started to diminish, I noticed I could draw large volumes of air through my nose or mouth, like I had not done for a good while, what I would call really clear breathing. My wife also commented that I seemed to snore less at this time. I continued to take allicin powder capsules on a maintained dose of 1-2 capsules every other day depending on how I felt. During this period of approx 6 months I never contracted a cold and had good health despite being in the company of others who had colds. Then, after stopping the allicin powder capsules for approx 6 weeks, I contracted a really severe cold. Straight away I started allicin powder capsules again. Within 2 days there was a noticeable improvement. The allicin powder capsules seemed to be reducing the symptoms of the cold; I was certainly recovering quicker than a colleague at work. Then I ran out of allicin powder capsules. This proved to be a disaster, the cold returned with a vengeance. On restarting the allicin powder capsules the cold

symptoms started to lessen, but it proved difficult to shake off until I doubled the dose – this was large enough to kill it off the second time. I can definitely say that there is a relationship between the allicin powder capsules dose/cold symptoms because when I ran out, the upturn in the cold symptoms seemed almost symbiotic. A cold like this would always go to my chest and result in a sore throat but this time it hasn't. This is very unusual. This product does do something that is difficult to explain and more information is needed on its uses.

Dosage I took: As an everyday supplement, 1-2 capsules twice a day for 3 days (to start), then 1-2 capsules every other day as maintenance. As a cold cure: 2 x 2 capsules every day (this may have needed to be more).'

Mrs PMI also from Kent is a sufferer of multiple sclerosis. This means that she has a severely compromised immune system and in previous years has always been highly susceptible to infections. She writes: 'Dear Sirs. Having MS and having no effective immune system I am certain that taking allicin powder capsules over the past winter has helped protect me from colds and flu. I am pleased to inform you, therefore, that allicin powder capsules with 100 per cent allicin will be a definite part of my future daily intake. Thank you so much. Patricia.'

The full published paper is reproduced here for your interest and understanding of the type of science involved with peer-reviewed clinical published evidence.

**Preventing the Common Cold With a Garlic Supplement:
A Double-Blind, Placebo-Controlled Survey. Peter Josling, B.Sc.
Garlic Centre, Battle, East Sussex, United Kingdom**

ABSTRACT

One hundred forty-six volunteers were randomized to receive a placebo or an allicin-containing garlic supplement, one capsule daily, over a 12-week period between November and February. They used a five-point scale to assess their health and recorded any common cold infections and symptoms in a daily diary. The active-treatment group had significantly fewer colds than the placebo group (24 vs 65, $P<.001$). The placebo group, in contrast, recorded significantly more days challenged virally (366 vs 111, $P<.005$) and a significantly longer duration of symptoms (5.01 vs 1.52 days, $P<.001$). Consequently, volunteers in the active group were less likely to get a cold and recovered faster if infected. Volunteers taking placebo were much more likely to get more than one cold over the treatment period. An allicin-containing supplement can prevent attack by the common cold virus. *Keywords: allicin; common cold; garlic supplement*

INTRODUCTION

The common cold is the world's most widespread viral infection, with most people suffering approximately two to five colds per year. Over 200 different viruses cause infection and cold symptoms; the most common, rhinoviruses, account for 30% to 40% of adult colds. Re-infection is prevalent because of this wide variety of infectious viruses.¹ Published literature on the activity of garlic against viral infections is sparse.^{2,3} One report⁴ describes that during an influenza epidemic, the former Soviet Union imported more than 500 tons of garlic cloves for acute treatment. Among the viruses sensitive to garlic extracts are the human cytomegalovirus, human rhinovirus type 2, herpes simplex types 1 and 2, and influenza B. Evidence points toward allicin and its condensation product ajoene as the main components in garlic responsible for this antiviral activity. Recently, an allicin-containing supplement (Allisure® Liquid and Capsules*) has demonstrated efficacy against herpes simplex type 1 and *molluscum contagiosum* infections.⁵ Many consumers take garlic supplements as a

preventive and report an absence of colds or symptoms associated with viral replication. A “cure” for the common cold would substantially reduce the number of work days lost each year as a result of the classic symptoms of infection – tiredness, headaches, a runny nose, sneezing, coughing, watery eyes and impaired concentration. The many garlic supplements marketed in the United Kingdom, United States, and Europe vary widely by type and definition of active constituents. Increasing evidence has shown that certain forms of supplement may have significant beneficial properties, provided that the universally recognized active constituent (allicin) is made available to the body.

This survey was designed to determine whether a unique garlic supplement that contains only stabilized allicin could prevent colds in healthy volunteers. The supplement chosen for study is the only product that claims to contain allicin as a starting material.

METHODS

Following recruitment through advertisements in two London daily newspapers, 146 participants were selected. A diary was designed in which each volunteer recorded general well-being for 3 months on a five-point scale (5 = well, no problems; 4 = quite well with occasional sneeze, not disruptive to normal routine; 3 = can feel a cold coming on, some minor symptoms; 2 = feeling low and beginning to exhibit symptoms; 1 = full cold symptoms [headache, sneezing, runny nose, tiredness]). If a cold occurred, volunteers noted the number and variety of symptoms, the day recovery began, and the day they felt completely better. The volunteers were separated into two groups of 73 participants each (matched for sex, age and garlic consumption). A simple random number generator assigned volunteers to the active or placebo group and they were instructed to take one capsule every day with the main meal, according to the manufacturer’s recommendation. Randomization codes were kept secure at the Garlic Centre and were

not broken until all the diaries had been returned. The Garlic Centre contacted volunteers every 2 weeks to ensure that the capsules were being taken correctly and that diary entries were made daily.

DIARY ANALYSIS

After diaries were returned, the number of colds experienced by volunteers was counted. A cold was defined as a score of 3 that proceeded to 2 or 1, with symptoms. The duration of symptoms was the number of days with a recorded score of 2 or 1, leading to an average recovery time that ended with a score of 4 or 5 taken across all recorded colds. The number of days challenged by the common cold virus was taken as the number of scores of 4 or 3.

STATISTICAL ANALYSIS

The average symptom length in days and the average number of days challenged by a cold were subjected to calculations of standard deviation, sample variance and standard error of the difference of the means. Data were analyzed by means of a Student's *t* test to gain a probability coefficient allowing for the calculated number of degrees of freedom.

RESULTS

Four participants withdrew from the study: three from the active group, one from the placebo group. Reasons for withdrawal from active treatment (1 volunteer each) were continued use of another garlic supplement, development of gout, and pruritic rash below the knees, which faded after the supplement was discontinued. The placebo volunteer was advised to discontinue taking the capsules after experiencing severe headaches.

At the end of the 90-day study, 24 colds were recorded in the active group, 65 in the placebo group. This result is highly significant ($P < .001$) in favour of the supplement as a cold preventive. The placebo

group required an average of 5.63 days (366 days of infection/number of colds) to recover, compared with 4.63 days (111 days of infection/number of colds) in the active group. Table 2 presents the results of the statistical analysis. During the study, the 16 volunteers taking the placebo became reinfected (ie, experienced more than one full-blown cold); only 2 volunteers taking the active supplement had a reinfection. Volunteers were also asked to record in their diaries any other concerns during the study, such as comments about the acceptability of taking capsules, side effects, odour or other reason that might warrant discontinuation of treatment, and to telephone the Garlic Centre if further advice was required.

Table 1. Demographics

Characteristic	Volunteers Active	Volunteers Placebo
Men	32	29
Women	41	44
Mean Age (y)	52	53
Previous use of a garlic supplement	11	10

Five volunteers (4, active; 1, placebo) noticed a “smell” during eructation. It is not clear whether they followed instructions and took the capsules with their main meal, however. Several members of the active group reported increased alertness and feeling generally healthier even though close contacts were falling ill. Some volunteers who took the active supplement while on holiday noted avoidance of gastric upset and mosquito bites.

Average symptom duration, days	Active	1.52
	Placebo	5.01
Sample variance	Active	7.20
	Placebo	35.24
Standard deviation		2.68
		5.94
Standard error of the difference of the means		0.76
Student's <i>t</i> distribution		4.58
No. of degrees of freedom		144
Probability with Student's <i>t</i> test		1.33E-05
		<i>P</i> <.001 (.0013%)
No. of days challenged	Active	2.6
	Placebo	6.38
Sample variance	Active	21.88
	Placebo	59.43
Standard deviation		4.68
		7.71
Standard error of the difference of the means		1.06
Student's <i>t</i> distribution		3.58
No. of degrees of freedom		144
Probability with Student's <i>t</i> test		4.95E-04
		<i>P</i> <.05 (.0495%)

DISCUSSION

This study is the first to use a double-blind, placebo-controlled design to investigate prevention of viral disease with a garlic supplement. The results overwhelmingly favoured the supplement as a preventive measure, demonstrating accelerated relief, reduction in the severity of troublesome symptoms such as sneezing, cough and runny nose, and recovery to full fitness. A reduced likelihood of becoming reinfected with other viral strains indicated general improvement in the immune system with the active supplement.

Of particular note is that volunteers in the active group took the manufacturer's recommended dose of one x 180 mg capsule per day. Over the past 10 years, other published reports on garlic supplements for numerous applications have often used double or triple the actual dose available in retail outlets. The allicin-containing supplement studied may represent a "cure" for the common cold. The results also suggest that infection and reinfection may be effectively prevented by its daily use throughout the year, with an enormous potential savings to national industry in terms of reduced sick days. This product clearly exhibits excellent antiviral activity and warrants further investigation to determine the nature and method of its viral destruction.

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This was the first controlled trial to show that stabilised allicin had antiviral activity. Surprisingly NO OTHER garlic extract (oils, pearles, powders or aged products) have ever completed this type of high quality, peer reviewed study on preventing and treating viral disease. The results are actually just as good as studies completed on very expensive pharmaceutical antiviral agents!

COUGH (and upper respiratory tract infections)

Medical definition

The upper part of the respiratory tract is responsible for warming, humidifying and purifying the air that comes into our body. It is therefore this area that is likely to become damaged by pollution or

infected by bacteria or viruses. The mucus membranes that make up the upper respiratory tract, when under stimulation, secrete mucus, and it is this that leads to a stuffy nose, sinusitis, earache or a chronic cough. An unrelenting cough is most annoying and yet in many cases the true cause is never discovered. We do know that it can be a deep-seated bacterial cause or, where it is caused by a cold, a viral infection. Allicin is good for chest complaints, especially troublesome and persistent coughs, since it has a major antitussive activity. Unlike most over-the-counter medicines, allicin powder capsules can destroy both bacterial and viral organisms with ease. This can be achieved in several ways.

Treatment regimen

Squeeze a small dose of allicin liquid into a cupful of warm milk, gargle for a few minutes. Do this every night for a few days. Then before retiring, take 6 Alli-C powder capsules (up to 1200 mg daily) and continue until the cough begins to break up. Then reduce the dose down to 4 and then to 2 after a further week.

CRYPTOSPORIDIUM

Medical definition

A parasitic infection caused by a protozoan that comes from infected human and animal excrement, commonly found in soil and fresh water. In recent years this has become a much more widespread problem. In 1993 approximately 400,000 Milwaukee residents were reported to have developed the infection from drinking contaminated water; dozens died. Recent infections in Great Britain and Canada were also traced to contaminated water supplies and large populations were required to boil water for domestic use for several months. No effective drug medications or water-sterilants are available and this parasite remains a cause for concern.

Treatment regimen

Treatment needs to be aggressive and prolonged to have a chance of destroying this parasite. A large dose of up to 10 allicin powder capsules (up to 2700 mg) a day should be taken all at once or spread throughout the day. It would also be sensible to take 10 drops of Allicin gel formula in fruit juice twice a day for the treatment period. Results will depend on each individual's response – but don't be afraid to persevere as the allicin can only do you good.

DANDRUFF

Medical definition

Visible scaling from the scalp is common and evident in at least 50 percent of the population. Dandruff is caused by the yeast *Pityrosporum ovale* and is often the precursor of seborrhoeic eczema of the scalp. This is usually accompanied by a degree of inflammation and greasy scaling. Most people don't realize dandruff is caused by a fungal infection and most proprietary shampoos and conditioners do not contain any antifungal agents at all. Consequently very little impact is made, and yet a huge amount of money is spent on the latest cosmetic products which promise success. Allicin liquid can be mixed with any shampoo or conditioner and just a few applications will get rid of dandruff very easily. Again it is necessary to adopt the "heal from within and heal from without" principle. This means that you must start taking allicin powder capsules at the same time since we are trying to get rid of an infection and prevent it from returning.

Treatment regimen

Add 8 drops of allicin gel to a normal measure of shampoo and massage as usual in the last wash. You can then use a conditioner if necessary. Repeat this every time you wash your hair for about 1 month. At the same time start taking just 1 capsule of Alli-C powder every day and continue this to help prevent the infection from returning.

DIABETES

Medical definition

There are two major types of diabetes: juvenile-onset and maturity-onset. The symptoms of juvenile-onset diabetes come on very dramatically and rapidly because the beta cells in the pancreas are producing little or no insulin. Insulin shots are required to manage juvenile-onset diabetes. The symptoms of mature-onset diabetes appear more gradually and can be treated by diet and tablets alone. Occasionally insulin injections may be necessary. In mature-onset diabetes, the beta cells in the pancreas still produce insulin, but it is the insulin receptors that become less sensitive to the insulin. Hence mature-onset diabetics have to control their blood sugar levels too. Diabetics are three times more likely to suffer from cardiovascular disease than a normal individual, are less able to fight off infections and will heal much more slowly than non-diabetics. Allicin powder capsules can offer a cascade of benefits to people suffering from diabetes.

Treatment regimen

To keep your circulation fit and healthy, take two allicin powder capsules every day. Use the gel, as detailed below, for treating minor wounds.

The author's own experience

As the author of this book I have a unique experience with the production and application of allicin. I am also a diabetic of some 35 years standing so anything I can do to reduce the risks detailed above has to be good for me. Consequently I take allicin capsules every day to help keep my blood pressure, cholesterol and circulation fit and healthy. Anyone who knows me will tell you that before the advent of allicin powder capsules, I used to take a popular garlic powder supplement and every year around October time I would get a real stinker of a cold. This would inevitably last at least 10 days as my

immune system doesn't function as well and my blood sugar levels would go haywire. Since starting allicin powder capsules several years ago I have not had ANY colds despite now having 2 young children at school! I can only put this down to allicin. Diabetics, myself included, also tend to heal very slowly. I still have a scar from a minor burn I sustained when I was a teenager and every time I cut myself it seems to take ages to heal properly. However, recently I have started putting allicin gel onto plasters or bandages used to dress small cuts and grazes. A short time ago I got a nasty wood splinter in my thumbnail. I managed to remove it but immediately it started to swell and become very painful. I immediately added just 3 drops of allicin gel to a band-aid and dressed the wound. Within a few hours the pain and swelling had begun to reduce. The next day, I changed the dressing and within 3-4 days the wound had healed, the swelling was gone and it was not painful at all. Several days later, having stopped the treatment, my skin began to flake and peel away leaving a perfectly healed thumb. Allicin is great stuff for diabetics.

DIARRHOEA

Medical definition

Frequent bowel evacuation or the passage of abnormally soft or liquid faeces. This is often caused by intestinal infection especially by *Escherichia coli*. Severe or prolonged diarrhoea may lead to extreme loss of fluids, salt and nutrients. As a person who sometimes gets a stomach upset that leads to terrible pains followed by the classic 'explosion', I have in the past relied on pharmaceutical preparations, which certainly do work. However, I much prefer to use allicin as it is safe, natural and very effective.

Treatment regimen

You can get rid of this type of problem very easily with allicin powder capsules. Taking up to 1620 mg in capsule form in one go

should get rid of an upset stomach. This may have to be repeated six hours later.

EAR INFECTIONS

Medical definition

Middle ear infection, or *Otitis media*, is one of the commonest of childhood complaints and tends to occur whenever there is a blockage of the Eustachian tube at the lower end due to catarrh or enlarged adenoids. If a cold or other respiratory infection occurs, it will often progress upward into the middle ear and cause pain of a stabbing or throbbing nature. The secretions will become infected with *Staphylococci* or *Streptococci* bacteria. Ear infections are particularly difficult to live with, especially for children, who tend to suffer more than adults. It can be impossible for your child to communicate the pain and discomfort they are suffering. As a caring parent you naturally want to get a quick resolution. A trip to the doctor will result in a prescription for an antibiotic drug which may work – but a cursory look at the medical databases shows that when children are aggressively treated with antibiotics they become 300 percent more likely to develop recurrent infections when compared to those who have no treatment at all. Overuse of antibiotics often causes another problem; since children are still developing an effective immune system, they can easily end up with a fungal infection.

Treatment regimen

Any condition that has a microbial cause can be treated with allicin. Children younger than 7 years can be given half a capsule a day. Children over 7 years, the normal adult dose of 1 capsule a day (270 mg). Split the capsules open and place the powder in their food. You can also drizzle the gel into the ear just 1 drop at a time for a period of up to 1 week. The gel may also be applied with a cotton bud.

ECZEMA

Medical definition

This is a common itchy skin disease characterised by reddening and vesicle formation, which may lead to weeping and crusting. Atopic eczema affects up to 20 per cent of the population and is associated with hay fever and asthma. It can affect young children in particular where the disease may last for several years and continue into adulthood. Most people who suffer from eczema will have their own treatment routine to keep the disease at bay. It could involve a number of pharmaceutical agents including steroids plus emollients, or any of a number of herbal remedies. However, most sufferers will also report that these treatments work for a while and then cease to be effective. One of the major reasons for this is that NONE of them (including pharmaceutical drugs) kill the bacterium found in 95 per cent of simple eczema cases – *Staphylococcus aureus*. This bug is frequently found all over the skin surface of eczema sufferers. This bacterium is clever and will selectively seek out a route into the human body (see MRSA section later) so an eczema patient is the ideal vehicle for *Staphylococcus aureus* to replicate on and infect. The bacterium's presence on the skin will cause a secondary infection, which leads to a worsening of clinical symptoms and also hinders the absorption of hydrocortisone. So it stands to reason that you must use an agent that can kill *Staphylococcus aureus* and allow the underlying disease to heal. Allicin can do this easily. So far over 260 strains of this infectious, multi-drug resistant bacterium have been tested against allicin liquid, powder and gel formulations and have all been blown away!

Treatment regimen

Begin by starting a high dose course of allicin powder capsules. Take up to 6 a day, which is approximately 1620 mg. At the same time take a few drops of allicin gel and apply sparingly to all your itchy eczema plaques. Follow this twice a day for a month or until you begin

to see improvement. Continue to take the capsules on a daily basis albeit at a reduced dose of 1-2 capsules per day.

EYE INFECTIONS

Medical definition

One of the most common and very contagious eye infections is conjunctivitis. Also known as pink eye, it is usually accompanied by a thick, yellow discharge, often crusting the eyes shut in the morning. Pink eye can be viral or bacterial in nature. The same type of virus that causes an upper-respiratory condition usually causes it. Other conditions of the eye include Meibomian or tarsal cysts, caused by blockage of the duct, a sty or hordeolum, an infection of the root of the lash and Blepharitis, a chronic inflammation of the margin of the lids, which can lead to recurrent infections.

Treatment regimen

Take two capsules (minimum 540 mg) of allicin powder daily. Allicin gel can be applied to a piece of lint and dabbed gently onto the infected area, being careful not to get any in the eye.

Testimonial

'In July I had a very bad eye infection. I went to the doctors and was prescribed an eye ointment called "Brolene". I had to apply this morning and evening and was told by the doctor if there was no improvement to go back to the surgery. The day after applying Brolene my eyes had a sticky residue. Using salty water I had a battle to separate my eye lashes. After a couple of days my eyes were still red and sore. The doctor then prescribed an antibiotic eye cream. I had to apply two drops morning and evening. If no better, I was to go back to my doctor. Two creams later and there was still no improvement. By this time I was really fed up. I then tried the allicin capsules taking two per day for two days. On the first day the itchiness had stopped and the redness became less. Then on the second day my eyes were

completely clear. I was so impressed that I have told friends and work colleagues about your product. As for myself, after taking them for two days the difference was unbelievable. As soon as friends mention they've got a pain or a sniffle they are all quite keen to try anything, and I think they too have been very surprised by the results. Thank you again. Yours sincerely, Mrs C Francis, Sussex, England.'

FOOD POISONING

(See DIARRHOEA and TRAVELLER'S TUMMY)

FUNGAL NAIL DISEASE

Medical definition

This is incredibly common in the Western World and in particular the United States where many millions of people suffer in silence. Caused by *Dermatophytes* and *Candida albicans*, the fungus invades the toe- or fingernails, feeding off the rich supply of keratin found deep in the nail beds. A number of factors will increase the likelihood of developing nail fungus, and these include poor hygiene, sugary diet, application of artificial nails and nail polish. Sadly yeast infections like this can often start from within our body so it is important to use an agent like allicin that can heal from within as well as treat the condition from without.

Treatment regimen

Simply apply a small dab of allicin gel to the skin of each infected nail or, if the fungus is on your fingernails, add just 1 drop of allicin liquid to each nail twice daily. One other sensible action would be to prevent a recurrent infection by taking allicin capsules regularly (2 per day). Another interesting benefit from applying the gel to fingernails is that it makes them much stronger and far less likely to crack or split. Apply just one drop per nail before you add your colour and within a few weeks you will notice a significant difference to the quality of your nails.

Testimonial

Many naturopathic physicians are now adopting stabilised allicin as the treatment of choice for many recurrent infections. A simple case history of fungal nail disease is presented here. Protocol during this period was 810 mg stabilised allicin per day.*

9th July



6th August





10th Sept



16th Oct

Dosing was then reduced to 360mg per day and then 180 mg/day.

*** Note revascularization from 6/8/05 onwards**

'I am amazed at these great results! I have tried all of the prescribed topicals and spent the time and expense going to the doctor's office, leaving with no results. I am telling everyone about this product!' - D.S.

GINGIVITIS

Medical definition

Inflammation of the gums caused by plaque on the surfaces of the teeth at their necks. The gums are swollen and bleed easily. This can lead to periodontal disease but is reversible with good oral hygiene. The composition of the plaque, which causes gingivitis, is a number of bacterial species.

Gums are growing tissue, which require a consistent supply of nutrients for continued good health. Once the gums begin to degenerate, a number of pockets can develop where food particles can accumulate and act as a magnet for further bacterial overgrowth – which also leads to the release of a wide range of toxins that continue the cycle of decay. Allicin powder can be easily placed on a number of foodstuffs to be chewed in the mouth and help to remove the various bacterial strains that infect our oral cavities.

Treatment regimen

Break open 2 allicin powder capsules per day (approximately 540 mg) and place the powder over your favourite food product and chew in your mouth twice daily – this will help to cleanse your mouth of bacteria. Alternatively rub the gel into your gums twice daily.

HAY FEVER

Medical definition

Hay fever is an allergic reaction to airborne pollen from trees, grasses and other plants characterised by inflammation of the membrane lining the nose and sometimes the conjunctiva. There are approximately 12 million sufferers of hay fever in the UK and more than 75 million in the USA. Symptoms vary from mild discomfort to those that are so severe that the sufferer cannot even go outdoors. One of the most recent peer reviewed studies that I have performed was

looking at hay fever prevention and treatment with allicin powder capsules. (shown after the testimonial below)

Treatment regimen

A daily dose of just 2 capsules per day (approximately 540 mg per day) can dramatically reduce the number of hay fever attacks that sufferers are likely to experience.

There are something approaching 200 million sufferers of hay fever worldwide and this is increasing significantly. While some pharmaceutical treatments are effective, patients often complain of side-effects and ask for a natural solution if possible. While evidence is sketchy on the use of herbal remedies to treat seasonal allergic rhinitis, history shows that a number have been reported effective.

Our survey was designed to determine whether stabilised allicin at a daily dose of 540 mg could prevent the classic hay fever attack amongst volunteers who have suffered for some years. Using a simple 5 point scoring system to grade the severity of any hay fever attacks, we found that the overall average score was 3.95, indicating that stabilised allicin capsules were able to control hay fever very well. Over 80% of volunteers reported a significant reduction in the number of challenges throughout the study period, Only two volunteers needed to resort to drug treatment (known as rescue medication) for an attack.

An allergic reaction is caused when the immune system mistakenly identifies a normally harmless substance as a threat. The reason why some people are allergic to substances such as pollen is unknown but it is thought that the cause is genetic.

The body's allergic response is triggered by the immune system reacting with mast cells that are found in or near a variety of organs

and tissues including the nose, lungs, skin, eyes and blood vessels. These mast cells contain high concentrations of histamine which is released when stimulated by the body's immune defences. Symptoms of hay fever include:

- a congested and itchy nose
- a constantly running nose
- eyes become itchy and watery
- eyelids become swollen and itchy
- breathing can become difficult
- there may be loss of taste and hearing
- dry cough
- headache

The symptoms vary in severity among patients. Also high or low pollen counts can induce differing reactions which can vary according to the time of day and also weather conditions.

Antihistamines are used to prevent the release of histamine from mast cells or to diminish the effect after the histamine has been released. Oral antihistamines are probably the most convenient treatment for most people. The newer types or non-sedating antihistamines are better tolerated and include Clarityn, Benadryl and Zirtek. However, these can take up to 24 hours before they start working.

Antihistamines differ in their duration of action and in side-effects. Generally the newer non-sedating products are longer acting and have fewer side-effects than the older drugs and all products noted above are available for sale without prescription from pharmacies.

Antihistamines available on prescription include Telfast and Neoclarityn (non-sedating) and Vallergran and Atarax (sedating).

Patients often prefer eye drops and nasal sprays since these are perceived as more efficacious due to direct application. Users must be reminded not to use this type of product when wearing contact lenses. Patients suffering from conditions such as glaucoma should avoid this type of product. Nasal sprays such as beclomethasone are available for sale through pharmacies and work by reducing inflammation and mucous production. It should not be used in cases of nasal infection and the product must be used with care.

Against this backdrop of increased use of pharmaceutical chemical antihistamines we decided to look at natural alternatives for the symptomatic relief of hay fever. Historically many types of garlic preparation, varying from fresh, crushed raw garlic to heavily processed powder products have been used to treat diseases of respiratory origin including asthma, bronchitis, allergies and inflammation. Interestingly it has been shown that garlic extracts are capable of inhibiting histamine release from basophils and mast cells as well as inhibiting lipoxygenase in neutrophils. For many years garlic has been used extensively in Third World countries as a simple, modestly effective treatment for a wide range of respiratory diseases.

Recently, allicin-containing supplements have demonstrated significant antibacterial, antifungal and antiviral properties, including the prevention of the common cold.

The many garlic supplements marketed worldwide do vary widely by type and definition of active constituents. Increasing evidence has shown that certain forms of supplement may have significant beneficial properties, provided that the universally recognized active constituent (allicin) is made available to the body.

Our survey was designed to determine whether a unique garlic supplement containing only stabilized allicin could prevent the classic hay fever attack among volunteers who have suffered for some years.

Following recruitment through a local radio station, 29 volunteers were enrolled in the late spring. A diary was designed in which each volunteer recorded general well-being for the study period of 35 days. A five-point scale was used:

- 5 = Well, no problems
- 4 = Quite well with occasional sneeze
- 3 = Can feel an attack coming on some minor symptoms
- 2 = Feeling low and definitely suffering
- 1 = Full hay fever attack with symptoms listed

Volunteers were instructed to record the number and variety of symptoms, the day recovery began, and the day they felt completely better.

They were asked to take 2 capsules of stabilised allicin (360 mg) each day with food in accordance with the manufacturer's recommendations.

Volunteers were also told that if a full hay fever attack occurred, they could revert to drug treatment if necessary. This was recorded in the diary.

The pollen count was recorded every day throughout the study period using both local and national information sources.

- The overall AVERAGE SCORE was 3.95 indicating that stabilised allicin was able to control hay fever very well

- Over 80% of volunteers reported a significant reduction in the number of challenges throughout the study period
- Only 2 volunteers needed to resort to drug treatment for an attack
- Most volunteers were impressed with the treatment and claimed that their hay fever was 'much better' controlled with allicin.
- Volunteers reported far fewer symptoms than they expected with big reductions in 'sore eyes', 'runny nose', 'itching at the back of the throat', 'sneezing' and 'tiredness'
- Everyone found stabilised allicin easy to take and did not report any side-effects. There were no reports of smell whilst taking this product

Generally, the volunteers reported that allicin was easy to take and effective. Although the treatment did not work for everyone and some comments indicated that the 'season' was finishing, most volunteers were extremely positive and included observations that previous drug treatment had never really removed all symptoms. People were more able to go about their normal daily routine without interruption from troublesome symptoms. One gentleman reported being able to play golf 3 times a week without any problems – apart from the golf! Another young lady was able to sit out on fresh mown lawn for the first time since her hay fever symptoms developed in her teens. Other unsolicited comments included volunteers being able to mix and socialise without worrying about running nose and streaming eyes.

The pilot investigation clearly shows that allicin-based supplements do show an ability to prevent allergic reaction to pollen and may indeed offer a safe and natural alternative to pharmaceutical preparations. The treatment should be started as early as possible and continued throughout the season. Further work should be done to ascertain the exact degree of efficacy and how stabilised allicin compares with a chemical alternative. Recently a aloe vera gel formula

has been released and this is likely to be very effective for oral use in controlling symptoms like a sore throat. For many people, allicin represents a real chance to reduce the number of compromises hay fever sufferers have to make each year.

Testimonial

‘This really is quite amazing. For the first time ever I have been able to go about my normal routine without sneezing and constantly feeling blocked up. This allicin product is definitely the best thing I have ever used for treating my hay fever. Thanks ever so much.’ – Zoe M, Crawley, Sussex

HEAD LICE

Medical definition

Lice are a form of insect parasite that live only on the hairy parts of the body, different varieties being closely adapted to certain areas and races, even to the extent of having specially shaped claws to cling to the hair of different races. The eggs of the head louse are found around the nape of the neck as small grey nits attached to the hair about halfway along and these take about two weeks to hatch, so the treatment must be repeated after a fortnight as only the lice are killed.

Control of infections with head lice has traditionally been performed using conventional insecticides rotated to avoid the development of resistance. In certain parts of the world some strains of lice have developed resistance to one or more insecticides. These ‘conventional’ agents are also highly inflammable and rather toxic to the human body – their suitability for use on children questionable. Faced with product claims that can no longer be justified, an increasing number of consumers are experimenting with untested methods. Some formulators have also decided to market products that are neither adequately tested for safety or efficacy nor licensed for this application. Some materials used in such applications are potentially

toxic and may encourage development of resistance to some of the potentially available alternative active substances.

Treatment regimen

Take a normal scoop of your favourite shampoo and add 20 drops of gel. Mix thoroughly and then shampoo the hair as normal. As with a conditioner, leave the shampoo on for a couple of minutes and then wash off and repeat again. One bottle of new Alliderm will give you at least 11 treatments. This procedure should be repeated every day for a week. This will ensure that the eggs and nits are removed. At the same time you must use all the normal measures recommended by public health experts, ensuring that you treat everyone in the family and thoroughly comb out any shells, eggs or dead lice still be stuck to the hair. At the end of the week your child's hair should be clean and nit-free but it is probably worthwhile using this technique once or twice for the following two weeks to prevent re-infestation as you can bet that somebody at school won't be as thorough as you! We have used this regimen at home on both our daughters with great success.

CLINICAL EVIDENCE

Pediculicidal tests

For the test procedure, an aliquot of approximately 5-10 millilitres of allicin liquid was poured into the base of a clean 30 millimetre plastic Petri dish. The gauze bearing the lice was immersed in the fluid for 10 seconds, during which time the gauze was turned at least twice to ensure removal of air bubbles. After removal from the fluid, the gauze and insects were lightly blotted to remove excess fluid and returned to their marked Petri dish. The same procedure was repeated for the other replicate gauze squares in that batch.

Gauze squares bearing the lice were incubated under normal maintenance conditions ($30^{\circ} \pm 2^{\circ}$ Celsius and $50\% \pm 15\%$ relative

humidity) overnight. At the end of the exposure period, the insects and gauze were washed using a bland toiletry shampoo or frequent wash shampoo. The lice were then fed a blood meal and left for 4 hours to recover before being treated once again as above. The results were read at 24 hours and 48 hours.

The control batches for this test were treated with 60% IPA (Propan-2-ol) as above.

Activity against lice

The tests with the allicin formulation show that with an overnight exposure it had effect on the lice with an overall mortality of 57.8% compared to that of the controls at 11.0%. However, after a blood meal and a second treatment, the results show 98.4% mortality, with the controls having just 28.6%.

FIRST ALLICIN TREATMENT				
Test	Dead	Alive	Morbid	Mortality
A1	5	11	7	52.2%
A2	9	7	5	66.7%
A3	7	9	4	55.0%
Control 1	2	18	0	11.0%
Allicin Total	21	27	16	57.8%
SECOND ALLICIN TREATMENT FOLLOWING A BLOOD MEAL				
A1	22	1	1	95.8%
A2	19	0	2	100%
A3	15	0	5	100%
Control 1	4	14	0	28.6%
Allicin Total	56	1	8	98.4%

Test completed at the Medical Entomology Centre in Royston, UK

Allicin-containing head lice shampoo formulations will become available in the very near future.

IMPETIGO

Medical definition

Impetigo is a superficial bacterial infection of the skin caused by *Staphylococcus aureus* infection. It mainly affects young children and is highly infectious, causing a yellow brown crusting on the skin. For a young child this can be particularly distressing as friends have to be warned 'do not touch' as it is so infectious. Once again the bacterial species involved is *Staphylococcus*, which is highly sensitive to allicin treatment.

Treatment regimen

For children under the age of 5 it is best to remove the powder from the capsule and spread the allicin over the child's favourite food or dissolve it in a juice drink. For older children you should gently apply 2 drops of allicin gel every 4 hours and dose 4 allicin capsules per day until the outbreak subsides. If your child has contact with any friends as well as family members then everyone should take 1-2 capsules, up to 540 mg a day, to prevent the infection from passing on.

Testimonial

A few weeks ago little Elliott from Madison WI developed a nasty bout of impetigo. His mother was really worried as she couldn't get hold of any antibiotics to calm it down and they were having a BBQ that day with lots of his friends invited. 'I really wanted something to help immediately and a friend said she had just purchased some allicin capsules and a small supply of liquid. Elliott used it immediately and literally within a few hours the attack had subsided and his plaques began to clear up. We were naturally delighted and would recommend this to anyone else who suffers from this debilitating condition.'

IRRITABLE BOWEL SYNDROME

Medical definition

This is a common condition in which recurrent abdominal pain with constipation and/or diarrhoea continues for years without any deterioration in general health. Although the cause is unknown it is generally accepted that stress, anxiety and a series of recurrent infections in the intestine all contribute. Most doctors will now agree that people who suffer from a wide range of digestive problems are likely to have an imbalance in the quality and content of their intestinal flora. Our stomach contains many hundreds of bacterial species, some of which are aggressive to our digestive system but many that are absolutely necessary for maintaining a normal healthy functioning bowel. When this balance is upset, symptoms occur and until the balance is reset many people will continue to suffer.

Alliin can be described as a prebiotic in that it possesses an ability to kill harmful digestive bacteria like *Salmonella* and *Escherichia coli*, but will leave healthy bacterial species like *Lactobacillus* and *Acidophilus* alone. This means that your own population of friendly bacteria can go about their business and continue to flourish without any problems from an over-population of nasty bugs. If you add a good quality probiotic (pick one that is multi-strain and offers as many friendly bacterial strains as possible) you will also add significantly to your friendly digestive population. Within a very short period of time you will notice that your bowel habits return to normal and that you can happily eat whatever you like.

Treatment regimen

Add 2-4 capsules of Alli-C plus a multi-strain probiotic to every meal. In some countries an excellent product that combines allicin with a number of probiotic strains and digestive enzymes is marketed. This works really well for patients with poor bowel function and usually significant results are seen within 7 days of treatment.

Testimonial

Jenny B from Stone in Kent has never been able to digest certain foods, especially bread. Already a convert to allicin, she added in a probiotic and follows the regimen detailed above. Within just a matter of days she was able to digest meals more easily and even bread stopped giving her stomach cramps and constipation.

MOLLUSCUM CONTAGIOSUM

Medical definition

This is a common disease of the skin, mainly affecting children. Characterised by papules less than 5mm in diameter, each with a central depression, the disease is caused by a pox virus (others in this group include *Variola* responsible for smallpox and *Vaccinia* which causes cowpox) and is spread by direct contact. Untreated, the papules will disappear within 2 years.

This is a very distressing disease found in children especially just starting pre-school. Most doctors will say that you just have to let the disease run its course. Well, now we have allicin!

Testimonial and treatment regimen

'Earlier this year I was told by our doctor that our daughter was suffering from *Molluscum Contagiosum*, a condition of the skin which causes wart-like spots which eventually (over a period of months or even years) turn into large and painful pustules which eventually burst, sometimes leaving behind a scar or pit. She was five years old at the time and we had first noticed some spots when she was only two.

Gradually, over this time, they had spread from her trunk and arms to her legs, and particularly between her legs and around the genital area. They were causing her a great deal of discomfort and embarrassment and it was most distressing to hear from the doctor that there was absolutely no treatment for them as they were caused

by a virus. We were told that although painful and unsightly, they were otherwise totally harmless and would disappear eventually. When I heard, through a friend, that it might be possible to treat them with garlic capsules and a gel, I decided that anything was worth a try.

Apparently, garlic has antiviral properties (among many other benefits including anti-bacterial and anti-fungal). Through the Garlic Information Centre, we were given a bottle of pure allicin liquid (a component of fresh garlic most associated with healing properties) and told to apply it to our daughter's spots twice a day with a cotton bud. After only three days there was a noticeable improvement, and after a week the spots had completely gone. We were absolutely thrilled and could hardly believe that allicin had worked so effectively and so quickly! I know from talking to other parents that *Molluscum Contagiosum* is common in young children and that it seems to be particularly rife at the moment, not just in my area, but countrywide. I would thoroughly recommend trying this treatment. It can do no harm and may work for others as it has for us!' - Claudia Macpherson, UK

NAPPY RASH - DIAPER RASH

Medical definition

A red skin rash within the nappy area, usually caused by chemical irritation (ammoniacal dermatitis) or infection with *Candida*. Ammoniacal dermatitis is caused by skin contact with a soiled nappy. The stool bacteria react with urine to form the irritant ammonia.

Allicin gel has the consistency and quality to be used as a nappy rash treatment. It contains 250ppm (parts per million) allicin and can kill fungal infections at a concentration as low as 1.7ppm!

Treatment regimen

Each morning apply a thin covering of allicin gel all over the nappy area. If possible do not allow your baby to sit in a soiled nappy

for very long before changing. Apply the gel every time you change your baby. Alliderm will also help with childhood eczema.

ONYCHOMYCOSIS

Medical definition

Dermatophytes are the fungi most commonly responsible for onychomycosis. Two dermatophyte species, *Trichophyton rubrum* and *Trichophyton interdigitale*, cause the vast majority of onychomycosis cases worldwide. Other related dermatophyte fungi that may be involved are *Epidermophyton floccosum*, *Trichophyton violaceum*, *Microsporum gypseum*, *Trichophyton tonsurans*, *Trichophyton soudanense* (considered by some to be an African variant of *T. rubrum* rather than a full-fledged separate species) and the cattle ringworm fungus *Trichophyton verrucosum*. A common outdated name that may still be reported by medical laboratories is *Trichophyton mentagrophytes* for *T. interdigitale*. The name *T. mentagrophytes* is now restricted to the agent of favus skin infection of the mouse. Though this fungus may be transmitted from mice and their danders to humans, it generally infects skin and not nails.

Other causal fungi include yeasts (5-17%), e.g., *Candida*, and non-dermatophytic moulds, in particular members of the mould genera *Scytalidium* (name recently changed to *Neoscytalidium*), *Scopulariopsis*, and *Aspergillus*.

*Onychomycosis due to *Trychophyton rubrum**

Yeasts mainly cause fingernail onychomycosis in people whose hands are often submerged in water. *Scytalidium* mainly affects people in the tropics, though it persists if they later move to areas of temperate climate.

Treatment regimen

Simply apply one or two drops of allicin Alliderm gel all over the affected nails. This should be done twice daily for between 4 to 6 weeks. Once the new nail begins to grow, the cracking and ridges will disappear. Patients should start on the capsules to act as a preventative against recurrent infections. As an alternative some people prefer to break open capsules and simply rub the powder over the affected area.

Testimonial

'Cured of onychomycosis!

For both humans and animals one family uses allicin spray against fungus, wounds and scratches with overwhelming results. The simple-to-use spray has become an indispensable part of 'the house pharmacy'. They have found out that the allicin product is a kind of panacea for both humans and animals.



'Does it get worse?

Maybe some get a fungus infection easier than others. Anyway I have suffered from different fungus infections and one day I noticed that my left toenail had become yellow and looked strange. I was nervous the nail might have to be removed. I read in a paper about the product's remarkable efficacy on wounds and fungus infections. I started spraying the toe. It took some time, but the fungus infection disappeared and the nail looked quite normal.

'Good remedy for scratches

Later on, the dentist told me that I had fungus in the mouth, so now I use the spray in the mouth and I am sure that the spray will

handle the problem. During work I injured my knuckles and sprayed the skin with allicin spray. The skin became fine again.

'Also for the dog

Our dog Susi had a wound on her stomach. We do not know how she got it. Anyway we sprayed the stomach and her skin got fine again very quickly. It is fantastic that a single little bottle can be used so many things.' – T Olsen, Denmark

PARASITES

Medical definition

Any living thing, which lives in or on another living organism. The parasite, which may spend all or only part of its existence with the host, obtains food and/or shelter from the host and contributes nothing to its welfare. Some parasites cause irritation and interfere with bodily functions. Others destroy host tissues and release toxins into the body, thus injuring health and causing disease. Human parasites include fungi, bacteria, viruses, protozoa and worms, and can all be treated with allicin.

Antiparasitic activity, including against some major human intestinal protozoan parasites such as *Entamoeba histolytica* and *Giardia lamblia*, is consistently observed with allicin. The main antimicrobial effect is due to allicin's chemical reaction with thiol groups of various enzymes, e.g. alcohol dehydrogenase, thioredoxin reductase and RNA polymerase, which can affect essential metabolism of cysteine proteinase activity involved in the virulence of *E. histolytica*.

A study completed at the Department of Medical Parasitology, New York University School of Medicine, 341 East 25th Street, New York, looked at the incidence of malaria which is increasing, and there is an urgent need to identify new drug targets for both prophylaxis and chemotherapy. Potential new drug targets include Plasmodium

proteases that play critical roles in the parasite life-cycle. They had previously shown that the major surface protein of Plasmodium sporozoites, the circumsporozoite protein (CSP), is proteolytically processed by a parasite-derived cysteine protease, and this processing event is temporally associated with sporozoite invasion of host cells. E-64, a cysteine protease inhibitor, inhibits CSP processing and prevents invasion of host cells *in vitro* and *in vivo*. Here they tested allicin, a cysteine protease inhibitor, for its ability to inhibit malaria infection. At low concentrations, allicin was not toxic to either sporozoites or mammalian cells. At these concentrations, allicin inhibited CSP processing and prevented sporozoite invasion of host cells *in vitro*. *In vivo*, mice injected with allicin had decreased Plasmodium infections compared to controls. When sporozoites were treated with allicin before injection into mice, malaria infection was completely prevented. We also tested allicin on erythrocytic stages and found that a 4-day regimen of allicin administered either orally or intravenously significantly decreased parasitemias and increased the survival of infected mice by 10 days. Together, these experiments demonstrate that the same cysteine protease inhibitor can target two different life-cycle stages in the vertebrate host.

Meanwhile in AIDS research: The AIDS Research Alliance in California has been testing the effectiveness of allicin in combating cryptosporidiosis, a parasitic infection of the intestinal tract. The test involved patients taking liquid allicin mixed with distilled water twice daily. Side-effects included the expected garlic taste and smell, but patients suffered from less diarrhoea and had stable or increasing body weight. For several patients, repeated testing showed negative results for cryptosporidium parasites. Larger trials are planned.

Treatment regimen

Take 6 allicin powder capsules (about 1620 mg of allicin powder) every day for at least 1 month and then reduce to 2 per day. At the

same time take some allicin gel and dilute it with distilled water: 1 part allicin gel to 1 part water and take this 3 times per day for at least 1 month.

PARONYCHIA

Medical definition

An inflamed swelling of the nail folds usually caused by infection with *Staphylococcus aureus*. Chronic paronychia usually occurs in those who habitually engage in wet work where a secondary infection is caused by *Candida albicans*. Antibiotics are often prescribed but the bacterium is now multi-drug resistant and therefore requires an agent like allicin that can kill both a bacterial and fungal infection. These two particular organisms are the most sensitive to allicin liquid and powder formulations (i.e. they are easily destroyed by allicin).

Treatment regimen

Apply Alliderm allicin gel directly to the infected area, twice per day will be needed. Take 2-4 (up to 800 mg per day) allicin capsules every day to get rid of any systemic infection (this is very common with *Candida*) and continue taking them after the infection clears to prevent it from returning.

PEPTIC ULCER

Medical definition

This is a breach in the lining of the digestive tract caused by digestion of the mucosa by pepsin and acid. A peptic ulcer can be found in the oesophagus, the stomach, duodenum or jejunum.

Ulcers are extremely common and for many years the medical profession had been convinced that the main cause was an over-production of stomach acid. However we now know that even people with low volumes of stomach acid can get ulcers and interestingly

stomach cancer is actually very common in people who cannot produce ANY stomach acid (achlorhydria) at all.

Treatment regimen

You will need to take a relatively large dose of allicin (up 1620 mg per day) over a 2-4 week period to prevent the release of urea and to enable the allicin to penetrate the protective lining of the stomach so as to seek and destroy the *Helicobacter* infection. Take your capsules every day, either all in one go or spread out over the day. If you are already on a course of antibiotics then this dose should be cut in half. However, if the combination doesn't clear the infection then try using just allicin at the increased dosage level.

PNEUMONIA

Medical definition

The two most common types of pneumonia are atypical pneumonia and bronchopneumonia. Symptoms include high fever, flushed, dry skin, uncontrollable shivering, aching, malaise and a cough with viscid sputum. Respiration is rapid and shallow and often painful. Atypical pneumonia is often caused by viruses, chlamydia (such as those caught from birds in psittacosis), mycoplasma or the *Legionella* bacillus of Legionnaires disease. Atypical pneumonia also involves the nervous system and digestive tract to cause confusion, hallucinations and diarrhoea. Bronchopneumonia can result from the invasion of a variety of organisms because of the lowered resistance of the body and the poor circulation through the lungs. The base of the lungs and the bronchi become slowly infected and collapse, leading to stupor, confusion and eventually death.

Treatment regimen

Take 2700 mg of allicin powder every day for at least 1 month and then reduce this gradually over the course of three months. If symptoms persist continue with the higher dose.

PRE-ECLAMPSIA

Medical definition

Pre-eclampsia is caused by a defect in the placenta, which joins mother and baby and supplies the baby with nutrients and oxygen from the mother's blood. It is potentially life-threatening to mother and baby if allowed to develop and progress undetected. Pre-eclampsia is marked by circulatory disturbances, including high blood pressure in the mother and growth problems in the baby. Early work suggests that allicin may have a significant role to play in the prevention of pre-eclampsia and of course it is perfectly safe to take. This is in direct opposition to the use of pharmaceutical agents that can rarely be used in pregnancy for fear of a serious, direct effect on the baby.

Treatment regimen

Just one capsule a day should be taken throughout the pregnancy but this can be doubled or tripled (up to 540 mg of allicin powder per day) if the blood pressure starts to rise. Several mums with a history of pre-eclampsia have used allicin during pregnancy and have not reported any rise in blood pressure.

PROTOZOAL INFECTIONS

(See parasites)

PSORIASIS

Medical definition

Psoriasis is a chronic but treatable auto-immune skin disease experienced by an estimated 80 million people around the world. Psoriasis can greatly affect self-esteem and overall quality of life. It can develop anywhere on the skin, though it usually appears on the scalp, knees, elbows and torso. It also may affect the nails and joints.

The exact causes of psoriasis are complex and not fully understood, but genetic traits leading to abnormalities in the body's response to infection are believed to be the underlying basis. A specialised type of white blood cell called a T cell has been identified as playing a key role in the inflammation that eventually leads to psoriasis plaques and related symptoms. These malfunctioning T cells travel to the surface of the skin and start an inflammatory reaction in which skin cells multiply 7 to 12 times faster than normal. The end result is the formation of psoriatic plaques. Allicin treatment for psoriasis fights back by reaching far beneath the skin to halt this psoriatic process exactly where it starts – in the immune system.

Treatment regimen

Take around 1620 mg of allicin powder capsules a day for two weeks. Reduce to 540 mg for a further two weeks. As a maintenance dose take just one 270 mg capsule thereafter to help prevent further attacks. Cover all the plaques at least twice daily with allicin gel.

RINGWORM

Medical definition

A fungal infection of the skin, scalp and nails, caused by dermatophyte *Microsporium trichophyton* and *Epidermaphyton*, which can affect animals and are usually the source of infections in humans. Ringworm can be spread by direct contact or by infected materials. Lesions are ring-like and cause intense itching. The commonest form is Athlete's foot. Ringworm can also affect the groin and thighs.

Treatment regimen

Use a few drops of allicin gel added to your normal shampoo and use 2-3 times a week. At the same time take up to 810 mg of Allicin powder capsules per day and this can be reduced down to 270 mg per day once you have got rid of the infection.

ROSACEA

Medical definition

A chronic inflammatory disease of the face in which the skin becomes abnormally flushed. It can become pustular and there may be associated keratitis. Most common in women and the cause is now thought to be a type of parasite known as Demodex, which is found in the hair follicles and sebaceous glands. They resemble tiny worms and are difficult to dislodge. It is thought the bacterium *Helicobacter pylori* may also be responsible for rosacea. Allicin will be able to destroy these parasites and bacterial infections.

Treatment regimen

Apply 1 or 2 drops of Alliderm allicin gel directly to the pustules once or twice per day. Also add 540 mg of allicin powder capsules per day permanently to boost your immune system.

SCABIES

Medical definition

This is a skin infection caused by the mite *Sarcoptes scabiei*, typified by severe itching, especially at night. Characteristic red papules are caused by deposits of faeces left by the mite, which tunnels into the skin to start laying eggs. New hatched mites are easily spread to other people by direct contact. Intense itching represents an allergic reaction to the mite, its eggs and faeces. The penis, nipples and the skin between the fingers are the most commonly affected areas. Normal treatment is with insecticides including Lindane and all sexual contacts and family members must be treated.

Treatment regimen

Currently allicin has not been used to any great extent in treating scabies. However, as we have already seen, allicin can kill head lice so it would make sense to use the gel in a soap to try and get rid of the

mites. A soap or the stabilised gel formulation, AlliDERM, is the recommended formulation to apply all over the body.

SHINGLES

Medical definition

This is another herpetic virus known as *Herpes Zoster*. Chickenpox is the primary infection of this virus and it is only when this reactivates that it produces the condition known as shingles.

Treatment regimen

A large dose of allicin capsules – up 2700 mg of allicin powder capsules per day should be taken for several months to try to end this resistant infection. Also 1/2 tablespoon of gel should be taken daily.

SINUSITIS

Medical definition

Sinusitis is an inflammation of the sinus cavities and may be caused by a variety of factors. Most recently, Johns Hopkins Medical School in America has shown that recurrent sinusitis is often associated with a fungal infection. Other contributory factors will include food allergy reactions and inhalant allergy from existing medications. Worldwide, millions of people suffer from sinus disease, which causes symptoms like hay fever, runny nose and post nasal drip. People are encouraged to buy expensive over-the-counter medications that may relieve symptoms for a short period. A minor operation to unplug the sinuses and remove all the infection built up is a relatively simple day surgery operation but rather uncomfortable. Unfortunately the symptoms usually recur after just a few months since the fungal component of this infection keeps returning.

Treatment regimen

Take 270-540 mg of allicin powder daily for 2 weeks followed by a maintenance dose of 270 mg daily. You can also squeeze a small amount of gel into each nostril to add to the effect.

Testimonial

Mr JH from Bexhill, UK, Mr PD from Prescott, Arizona and Mrs JAH from Oslo, Norway all had recurrent and persistent sinusitis. Having also had an operation to unblock the sinus cavities they still had the common symptoms including sneezing, runny nose and a constant feeling of being bunged up. They all tried allicin and adopted the above protocol to gain excellent benefits.

SORE THROAT

Medical definition

A condition caused by a variety of microbes including bacteria, virus and fungal species. As one of the commonest infections known to man, it is also one of the most troublesome, causing intense discomfort that hitherto could only be temporarily alleviated by anaesthetic lozenges bought over the counter.

Treatment regimen

Take 270 – 540 mg of allicin powder capsules in one go and your sore throat will fade away and not get any worse. This is because allicin has the unique ability to kill both virus and bacteria at the same time. You can also squeeze some gel to the back of the throat.

TICK BORNE DISEASES

(See Parasites and Lyme Disease)

THRUSH

(See Candidiasis)

TOOTHACHE

Toothache is almost always caused by an infection. An infection can be easily treated with allicin powder or liquid. In ancient times people used to cut up a clove of garlic and place it in or around the tooth abscess. Pain relief was usually immediate.

Treatment regimen

Apply the gel by rubbing a few drops in and around the painful area or alternatively open up a capsule and rub a little allicin powder with vitamin c over the infected area.

TRAVELLER'S TUMMY

Medical definition

Those who travel to different parts of the world are at increased risk of infection from organisms in the locality as well as from alterations to their diet. Traveller's tummy is a result of coming into contact with a strain of E. coli with which the gut is unfamiliar. Symptoms can vary, though normally include abdominal pain and diarrhoea. The maxim that travel broadens the mind but loosens the bowels is all too true for up to half of us travelling to 'high risk' areas such as South America, Asia, Africa and parts of the Middle East (Drugs and Therapeutics Bulletin, June 2002). The familiar symptoms of 'the runs' and cramps, accompanied by nausea and/or vomiting, can be both embarrassing and distressing. Consuming food or drink contaminated with bacteria, viruses, or parasites is usually to blame for travellers' diarrhoea. Most cases are bacterial, with E. coli the prime suspect.

There are three approaches to coping with travellers' diarrhoea: prevention (for instance by taking allicin powder capsules and probiotics *before* you go to ward off infection); self treatment (taking a self-treatment kit with you - this would also include a fluid replacement); and letting it take its course. The choice depends largely

on your age, your general health and the type of holiday envisaged. Most bouts of travellers' diarrhoea clear up spontaneously in two to three days but it's important to replace the fluid lost as dehydration can be dangerous, especially in the elderly and very young.

Aim for prevention if you have a condition that makes you prone to infection, for instance low immunity, diabetes, or an ailment that requires drugs to suppress stomach acid. In such cases it's probably worth discussing travel plans and the need for prophylactic antibiotics with your doctor but for most people, the US National Institutes of Health and the Centres for Disease Control advise against taking antibiotics for prevention of traveller's diarrhoea.

An alternative preventative approach is to take allicin powder capsules and a probiotic for a week before travelling. Trials have shown that probiotics can help restore the colonies of 'friendly' bacteria that have been flushed out by infection and treatment and that allicin can both prevent bacterial infections and get rid of them quickly if you do pick one up.

If you choose the second option, self-treatment, there are several alternatives. Taking antibiotics after infection will usually shorten the duration of symptoms. Ciprofloxacin will deal with many of the culprit bugs but by adding allicin you get an extra benefit since the duration of the symptoms can be reduced to less than 6 hours. Resistance won't be a problem as allicin can wipe out Cipro-resistant bugs and has the added advantage of working against viral or parasitic infections as well. You should consult a doctor if there's any visible blood or mucous in your stools or if the diarrhoea persists for more than five days. Diarrhoea can also be the signal for several serious conditions such as cholera, typhoid and parasitic infections.

Treatment regimen

As well as following the usual safe practices appropriate to your destinations, start your course of allicin powder capsules and a probiotic 7 days before you travel, maintain it throughout your holiday and continue the course for 7 days after your return.

VERRUCAE

(Plantar warts)

Medical definition

Verrucae occur on the soles of the feet and are often contracted in warm moist areas, particularly swimming pools and showers.

Treatment regimen

Use allicin gel after washing, once a day, until the warts disappear.

WARTS

Medical definition

A wart is a benign growth on the skin caused by infection with human papillomavirus. Common warts are firm, horny papules, found mainly on the backs of the hands. Most will clear spontaneously within 2 years. Plane warts are flat and skin-coloured and therefore difficult to see; they are usually found on the face and may be present in very large numbers. Genital warts are frequently associated with other genital infections and affected women have an increased risk of developing cervical cancer.

Treatment regimen and testimonial

Apply allicin gel at least twice daily by massaging a small amount into the surface of the wart. Users report that the treatment takes effect in approximately 2 weeks and the warts have completely disappeared within 1 month. One user re-applied allicin

every day for no more than a week and found the warts had completely disappeared.

WOUNDS

Current research shows that allicin formulations can help to heal wounds quickly and prevent infection.

Treatment regimen

If an infection is present in a wound then allicin liquid or the new gel formulation, backed up by a normal dose of allicin powder capsules, does appear to remove stubborn wound infections.

Personal Testimonial

This author writes: 'I am a bit clumsy and have to admit that just about every time I am out in the backyard I do something that causes me a minor injury! Well now I routinely apply a little allicin liquid to the Band-Aid before I stick it over the wound. A short while ago I got a nasty wooden splinter in my thumb – it immediately began to swell and was very painful. I managed to get the wood out but my thumb was beginning to balloon. So I just applied 2 drops of allicin gel to the plaster and repeated this a few hours later. The pain had already gone and within a day the swelling was much better and I healed perfectly. This is also unusual for me as I am a diabetic and very slow to heal. So this time my thumb healed perfectly and the old skin flaked away to reveal a perfectly healed wound with no scarring. I could have used a small dose of powder as an alternative but allicin liquid is really easy to use.'

Part Three

More serious conditions

The conditions described in the previous chapter can be self-treated using allicin quite safely, although it must be re-emphasised that where a treatment is being prescribed by a doctor, whether it be ongoing or short-term, you should always defer to that advice and, if you decide to treat yourself with allicin, discuss what you are planning with your practitioner. There are, of course, a range of medical conditions of a more serious nature where there are indications allicin has a part to play. I feel it prudent to offer the following as no more than an indication of the state of play, except for MRSA where we have good data to prove that stabilised allicin can easily get rid of this pernicious bacterial infection that kills many thousands of people worldwide.

AIDS (Acquired Immunodeficiency Syndrome)

Medical definition

A syndrome first identified in Los Angeles in 1981 and said to be caused by the human immunodeficiency virus (HIV), resulting in suppression of the body's immune response. For those people who do enter a chronic stage there may be illness of varying severity including persistent generalised involvement of the lymph nodes – this is termed ARC (AIDS Related Complex) including intermittent fever, weight loss, diarrhoea, fatigue and night sweats. Often opportunistic infections can be life threatening to AIDS sufferers, especially pneumonia caused by the protozoan (*Pneumocystis carinii*) and possible tumours leading to Kaposi's Sarcoma. Thus it's said that it's not actually the AIDS virus that kills but the infections challenging a seriously depleted immune system. With this in mind it is clear that large doses of allicin powder can help to prevent infections from developing in HIV and sero-converted AIDS sufferers. By boosting the

immune system and destroying a wide range of infectious organisms, allicin powder can definitely help. In the USA, trials in AIDS patients have demonstrated enhancement of natural killer cell activity using garlic extracts, and Chinese studies with viral infections in bone marrow transplant patients have demonstrated a 'potent antiviral activity'. Human population studies have shown that regular intakes reduce the risk of oesophageal, stomach and colon cancers. This was thought to be due to the antioxidant effect of allicin in reducing the formation of carcinogenic compounds in the gastro-intestinal tract.

The other major problem encountered by AIDS patients is a vastly increased number of bowel movements. They may have as many as 15 movements a day, making life absolutely horrid. Early work with allicin has shown that bowel function in this difficult-to-treat group can be returned to normal whilst taking up to 1350 mg of allicin powder capsules every day. Adding a good probiotic is also sensible and can improve the quality of life for these patients significantly.

Testimonial

As this book went to press, Clive from New York City had been HIV+ for 10 years and has had full-blown AIDS for 2 years. He picked up a serious infection and used large doses of allicin powder capsules to get rid of it: 'As someone who has had full-blown AIDS for over two years, I can attest to the strength and promise of allicin powder capsules. For a quick example, I was experiencing diarrhoea about once every day or two and then I started taking the capsules. Since I started using them, I have not had diarrhoea ONCE. I have been using allicin powder capsules for about two months now. More dramatically, when I received my first shipment in the mail, I had been sick for three days with a viral infection and had been feeling worse each day. On the third day, I was really quite miserable and ill, especially realising that this illness could go on for two or three weeks – or worse. I started taking my first capsule toward the end of that third day and two days

later (Superbowl Sunday evening in the US), I was sitting up, eating a pizza and enjoying watching television. I was surprised I felt so much better in such a relatively short period of time (48 hours). By the end of the third day I felt like I was basically over my viral infection and that the 'bug' had been killed. Naturally, I was not back to full vigour just yet but each day on allicin capsules I felt stronger, healthier and more vigorous. I was back to my full strength and vigour in about ten days, which is about what it would be for anyone.

'I was astounded at the healing power that allicin apparently contains. I feel like allicin will, in time, prove itself to be essentially an 'immune system in pill form', seemingly without drawbacks, side-effects, etc. Based on my personal experience, the potential for improved health for humankind could be enormous, truly staggering. If allicin could offer this kind of powerful help to someone in my condition, what could it do for people with normal immune systems?

Since I've started using this product, I have not experienced any other abnormal health problems at all, and I'm not taking any other medicines. I'm now beginning to think that I may be able to 'get my life back', return to work, etc. This as opposed to thinking that my days were more or less numbered! I now once again do things that I enjoy – with confidence – for I no longer feel afraid to over-exert myself physically. My life has, relatively speaking, returned to normal. I consider allicin powder capsules to be a medical miracle.'

A few weeks later Clive sent me another letter:

'More good news! After years of having borderline high blood pressure, my last visit to the doctor tells me my blood pressure is good! At first I thought, how could that be possible? Why would my blood pressure suddenly be so different? I think it's the allicin. I can't

think of any other change in my life that might have lowered my blood pressure to such a degree.'

BACTERIAL INFECTIONS

Medical definition

A group of micro-organisms, all of which lack a distinct nuclear membrane and are considered to be more primitive than animal, plant or human cells. Most bacteria are single-celled. Bacteria reproduce asexually by simple division of cells and incomplete separation of daughter cells can lead to the formation of colonies consisting of different numbers and arrangements of cells all with different and complex shapes. Bacteria are very widely distributed. Some live in soil, water or air; others are parasites of man, animals and plants and many cause disease by producing toxins.

The minimum inhibitory concentrations of allicin in parts per million for some common bacterial species

- Streptococcus pyogenes 16 ppm (flesh-eating bacteria)
- Staphylococcus aureus 16 ppm (implicated in eczema)
- Listeria monocytogenes 16 ppm (caught from animals)
- Escherichia Coli 0157 32 ppm (poorly cooked meat)
- Salmonella typhimurium 32 ppm (raw eggs)
- Clostridium perfringens 64 ppm (animals and man)
- Helicobacter pylori 16 ppm (stomach ulcers)
- Yersinia enterocolitica 12 ppm (stomach upsets)
- Bacillus subtilus <3 ppm (causes conjunctivitis)

Case study - drug-resistant Streptococcus

Camilla, a young Norwegian mother of two children went into hospital to have her third child by Caesarean section. Although everything went well she picked up an infection, a not uncommon event in even the best-run hospitals. Camilla had a drug-resistant *streptococcus* and after she was discharged, her wound failed to heal for

several months and she had a systemic infection that made her tired, washed out and unable to look after her new baby and family. With her husband taking time off work, Camilla was desperate. Then she read about allicin. After taking 10 capsules per day (2700 mg per day) for 4 weeks she began to feel better. Although she had already stopped taking the antibiotics in less than a month, her specimens came back negative – no bacterial infection. No bacteria found in her throat, her underarms or vagina. She was clear, healthy and cured.

DRUG-RESISTANT CLOSTRIDIUM DIFFICILE

Medical definition

C. difficile is a spore-forming bacteria which can be part of the normal intestinal flora in as many as 50% of children under age two, and less frequently in individuals over two years of age. *C. difficile* is the major cause of pseudomembranous colitis and antibiotic-associated diarrhoea. *C. difficile*-associated disease occurs when the normal intestinal flora is altered, allowing *C. difficile* to flourish in the intestinal tract and produce a toxin that causes a watery diarrhoea. Repeated enemas, prolonged nasogastric tube insertion and gastrointestinal tract surgery increase a person's risk of developing the disease. The overuse of antibiotics, especially penicillin (ampicillin), clindamycin and cephalosporins may also alter the normal intestinal flora and increase the risk of developing *C. difficile* diarrhoea.

Treatment regimen and testimonial use of allicin

This testimonial began a few months ago when my friend was hospitalized with pneumonia and was given the antibiotic levaquin. The levaquin killed off the good bacteria in her colon, at which time she started with severe diarrhoea and was diagnosed with *C. difficile*. Her case is complicated by a seizure disorder. When the diarrhoea started (within two days after stopping the antibiotic), she went into grand mal seizures and was taken to the hospital by ambulance, where

she remained for 3-4 days. She was then sent home on an antibiotic called flagyl. When the course was finished the diarrhoea started again, as did the seizures. This meant another trip to the hospital via ambulance for another 5-day stay, then to a nursing home for 3 weeks to continue taking 500 mg of flagyl and 500 mg of vancomycin four times a day.

At this time she needed therapy because of her weakened physical condition. She returned home taking both flagyl and vancomycin but as soon as the antibiotics were gone, within two days the severe diarrhoea and grand mal seizures returned, prompting a re-visit to hospital, followed by another trip home on flagyl and vancomycin!

It was June 7 when I had my first shipment of stabilised allicin sent to treat Jill and we were also using several kinds of herbs. We used them along with the antibiotic for the remainder of June and into July. We were using 30 acidophilus enteric-coated capsules from March to mid-June, after which we cut back the acidophilus capsules to 4 three times a day and started with *Saccharomyces boulardii*. We used 15 x 450mg allicin a day for the first week plus the probiotics, which was then reduced to 9 x 450mg each day. Jill then decided to stop taking the pharmaceutical antibiotic and just take the allicin. She was tested at the hospital lab and found still to be positive with c-diff.

At this point we continued with the allicin 5 three times a day for 2 weeks along with the herbs and probiotics, and after the next specimen stool she got her first negative c-diff test back. At that point we cut her back to 9 x 450mg allicin a day and that is where she is now. Jill has now had 3 c-diff tests since I started this story and thanks to allicin they have all been negative. She has regained her strength and is feeling great. This has been a long journey and Jill continues to take a maintenance dose of 6 x 270mg each day to rebuild her immune system.

DRUG-RESISTANT ACINETOBACTER BAUMANNII

Medical definition

Acinetobacter (ass-in-ée-toe-back-ter) is a group of bacteria commonly found in soil and water. It can also be found on the skin of healthy people, especially healthcare personnel. While there are many types or 'species' of *Acinetobacter* and all can cause human disease, *Acinetobacter baumannii* accounts for about 80% of reported infections. Outbreaks of *Acinetobacter* infections typically occur in intensive care units and healthcare settings housing very ill patients. *Acinetobacter* infections rarely occur outside of healthcare settings.

What are the symptoms of Acinetobacter infection?

Acinetobacter causes a variety of diseases, ranging from pneumonia to serious blood or wound infections, and the symptoms vary depending on the disease. Typical symptoms of pneumonia could include fever, chills or cough. *Acinetobacter* may also colonize a patient without causing infection or symptoms, especially in tracheostomy sites or open wounds.

How do people get Acinetobacter infection?

Acinetobacter poses very little risk to healthy people. However, people who have weakened immune systems, chronic lung disease or diabetes may be more susceptible to infections with *Acinetobacter*. Hospitalised patients, especially very ill patients on a ventilator, those with a prolonged hospital stay or those who have open wounds are also at greater risk for *Acinetobacter* infection. *Acinetobacter* can be spread to susceptible persons by person-to-person contact, contact with contaminated surfaces, or exposure in the environment.

How is Acinetobacter infection treated?

Acinetobacter is often resistant to many commonly prescribed antibiotics. Decisions on treatment of infections with *Acinetobacter*

should be made on a case-by-case basis by a healthcare provider. *Acinetobacter* infection typically occurs in very ill patients and can either cause or contribute to death in these patients.

Since Operation Iraqi Freedom began in 2003, more than 700 US soldiers have been infected or colonized with *Acinetobacter baumannii*. A significant number of additional cases have been found in the Canadian and British armed forces and among wounded Iraqi civilians. The Armed Forces Institute of Pathology has recorded seven deaths caused by the bacteria in US hospitals along the evacuation chain. Four were unlucky civilians who picked up the bug at Walter Reed Army Medical Center in Washington, DC, while undergoing treatment for other life-threatening conditions. Another was a 63-year-old woman, also chronically ill, who shared a ward at Landstuhl with infected coalition troops.

Behind the scenes, the spread of a pathogen that targets wounded GIs has triggered broad reforms in both combat medical care and the Pentagon's networks for tracking bacterial threats within the ranks. Interviews with current and former military physicians, recent articles in medical journals and internal reports reveal that the Department of Defence has been waging a secret war within the larger mission in Iraq and Afghanistan - a war against antibiotic-resistant pathogens.

Acinetobacter is only one of many bacterial nemeses prowling around in ICUs and neonatal units in hospitals all over the world. A particularly fierce organism known as MRSA - methicillin-resistant *Staphylococcus aureus* - infects healthy people, spreads easily and accounts for many of the 90,000 fatal infections picked up in US hospitals each year. Another drug-resistant germ on the rise in health care facilities is the aforementioned *Clostridium difficile*, which moves in for the kill when long courses of antibiotics have wiped out normal intestinal flora.

Forerunners of the bug causing the military infections have been making deadly incursions into civilian hospitals for more than a decade. In the early 1990s, 1,400 people were infected or colonized at a single facility in Spain. A few years later, particularly virulent strains of the bacteria spread through three Israeli hospitals, killing half of the infected patients. Death by *Acinetobacter* can take many forms: catastrophic fevers, pneumonia, meningitis, infections of the spine, and sepsis of the blood. Patients who survive face longer hospital stays, more surgery, and severe complications.

You may not be surprised to learn that this nasty infectious organism is easily killed by stabilised allicin extracts and this work has now been presented at The Canadian Association for Clinical Microbiology and Infectious Diseases meeting in Halifax Novo Scotia in March 2007 (shown below).

DRAB (Drug resistant *Acinetobacter baumannii*) is a nosocomial pathogen. Many intensive care units around the world have their own endemic strain. Some patients become colonised with the organism with no adverse effects, while others have life-threatening infections. DRAB can be resistant to many antimicrobial agents and treatment of infections is increasingly difficult due to the dwindling choice of active agents. There is an urgent need for new agents active against DRAB and our objective was to contribute to this research.

The antimicrobial activity of a novel aqueous allicin extract (AB1000) was tested against 11 clinical isolates of DRAB. The allicin content of AB1000 was confirmed using HPLC. Strains were screened for activity using agar diffusion methods, MIC's and MBC's were carried out and growth (using spectroscopy at 490nm) and killing curves (using viable counts) for selected organisms were determined.

Presented at the Canadian Association for Clinical Microbiology and Infectious Diseases meeting in Halifax Novo Scotia in March 2007

Agar diffusion tests using AB1000 concentrations ranging from 125 to 1000mg/l were made up in aqueous solution. Zone diameters on Oxoid Mueller Hinton agar ranged from 14mm to 31mm, slightly but not significantly smaller than the zones found with Oxoid Isosensitest agar of 20mm to 34mm. At 500mg/l the zone sizes for the 11 strains tested varied from 22-29mm with an average zone diameter of 26.3 mm and a mode diameter of 27mm. Minimum inhibitory concentrations varied from 15 mg/l to 62.5mg l⁻¹ with a mode concentration of 62.5 mg l⁻¹. Minimum bactericidal concentrations varied from 62.5 to 125 mg l⁻¹. In growth curves, when compared to the allicin free control, growth at sub-inhibitory concentrations was delayed by 1-2hrs at 15 mg/l and by 3-4hrs at 31mg l⁻¹. At 62.5 mg l⁻¹ growth was completely inhibited. In killing curves using AB1000 at a concentration of 500mg l⁻¹, growth was reduced by 30% in 1 hour and by 99.9997% at six hours. This represented a reduction in cfu ml⁻¹ from Log 7.3 to Log 3.8 cfu ml⁻¹. At 24hrs no growth was detected.

Allisure Allicin was shown to be bactericidal against DRAB at pharmacokinetically achievable concentrations. Killing curve data shows antibacterial activity begins within the first hour of contact. We have also demonstrated that sub-inhibitory concentrations as low as 15mg l⁻¹ can reduce growth.

CONCLUSION: ANOTHER ONE BITES THE DUST!

How does allicin work in these situations?

Stabilised allicin has now been formulated into an active range of products that all contain Allisure® which is the only patented, stabilised allicin powder extract available worldwide. Liquid, cream and gel presentations all show highly significant activity against multi-

drug-resistant organisms, including MRSA. The mechanism of action of allicin may be due to inhibition of certain thiol-containing enzymes in the microorganisms by the rapid reaction of thiosulfinates with thiol groups. This was assumed to be the main mechanism involved in the antibiotic effect of allicin. Recent studies have suggested that the mechanism of action of allicin may be its ability to react with a model thiol compound (L-cysteine) to form the S-thiolation product S-allylmercapto-cysteine. The identification of the thiolation product was proven by nuclear magnetic resonance as well as by mass spectroscopy. The main antimicrobial effect of allicin is due to its interaction with important thiol-containing enzymes. In the amoeba parasite, allicin was found to strongly inhibit the cysteine proteinases, alcohol dehydrogenases as well as the thioredoxin reductases (Ankri *et al.*, unpublished results) which are critical for maintaining the correct redox state within the parasite. Inhibition of these enzymes was observed at rather low concentrations (<10 mg/mL). Allicin also irreversibly inhibited the well known thiol-protease papain, the NADP⁺ dependent alcohol dehydrogenase from *Thermoanaerobium brockii* and the NAD⁺ dependent alcohol dehydrogenase from horse liver.

CANCER

Medical definition

Cancer is a disease of metabolic imbalance and can originate in a thousand different ways. Cancer occurs when cells lose their ability to replicate in an orderly fashion; they divide too rapidly and grow without any order. Too much tissue is produced and tumours begin to form. Tumours can be either benign or malignant. Malignant tumours can invade and destroy nearby tissue and organs. Cancer cells can spread to other parts of the body and form new tumours. It is estimated that one in three people will develop a type of cancer at some time in their life and that cancer continues to account for around 25 per cent of all deaths recorded each year. Traditional Chinese

medicine has always used garlic as a part of any treatment for patients who suffered from a tumour or cancer.

The search for compounds that prevent cancer has intensified with the mounting evidence that many types of cancer are caused or triggered by factors relating to lifestyle and environment. It is well documented that allicin can strengthen the immune system, which is vitally important in fighting cancer. When I reviewed this important area of medicine I was surprised and pleased to find a considerable amount of data already published indicating that by taking allicin powder capsules regularly you can confer some degree of protection against various stomach cancers and boost your CD4-T cell count. Interestingly, the medical community has known about this for years and is currently trying to establish which compounds are the most protective, since evidence also shows major benefits from diallyl disulphide, which is a common breakdown component of allicin powder.

Many of the breakdown products from allicin have been tested for their inhibiting effect on cancer cells and in most experiments inhibition of tumour growth was established. Researchers concluded that evidence from laboratory experiments and population surveys is presently not conclusive as to the preventative activity of allicin. However, they also indicated that the available evidence warrants further research into the possible role of allicin in the prevention of cancer in humans.

Anti-cancer effects

In ancient times, garlic was used for the treatment of cancer of the uterus. Numerous reports, including several important epidemiological studies, have entered the scientific literature asserting that garlic has a favourable effect on various forms of cancer. The following

provides an overview of the current research and points of view concerning this very interesting special area of medicine.

Six decades ago, several statistical studies indicated that cancer occurs the least in those countries where garlic and onions are eaten regularly - for instance, in the Provence region of France, Italy, the Netherlands, the Balkans, Egypt, India, and China. A review article, published in 1936, referred to the connection between nutrition and cancer, and especially to the cancer growth-inhibiting effect of leek plants (*Allium* plants). The practicing physicians of the time were very good observers but knew almost nothing about the scientific background to this phenomenon. It was thought that the inhibitory action of garlic on putrefaction in the intestines, together with the secretion-stimulating effect, brought about detoxification and an increase in resistance. Stimulation of gastric juice secretion and restoration of the intestinal flora, combined with the resulting prevention of gastrointestinal autointoxication, may help to remove at least one of the possible causes of cancer.

Garlic was therefore thought to have potential as a cancer preventative. More recently, this idea has again been pursued, not only in Europe but also in the Third World where the favourable effects of garlic for cancer are well known. For instance, the consumption of black or green teas, as well as of garlic, is known to be a culinary practice which inhibits tumorigenesis in the lung, fore-stomach, and oesophagus. The only known study in which garlic has been used to treat patients with advanced stages of cancer was conducted by Spivak (1962). An aqueous garlic juice preparation was administered in doses of 0.2-2mL intravenously or 1-5mL intramuscularly daily for 3-7 days. Of 35 patients with cancer at various sites (lung, cervix, stomach, lower lip, mammary gland, larynx, and leukaemia), 26 showed positive treatment results of differing degrees, though complete healing was not achieved in any case. There is a single-case report, however, of a

man whose pituitary tumour shrank by 50 per cent during the 5 months in which he ate 5-7 grams of fresh garlic daily. This was the first case ever reported of reduction of this type of tumour without chemotherapy or surgery. Some notable success stories have been reported using allicin powder capsules, especially in Norway where patients with various types of cancer have dramatically improved their CD4-T cell count (a measure of how efficient your immune system is). Patients undergoing chemotherapy or radiotherapy tend to have very poorly functioning immune systems since these are effectively destroyed by the treatments.

Anti-cancer effects - active compounds

From the many publications that have just been reviewed, it is apparent that the anti-cancer effects of garlic are likely due, perhaps equally, to allicin and allicin-derived compounds as well as unidentified compounds not related to allicin. The following is a summary of the evidence for possible active compounds.

1. Epidemiological studies from six different countries have consistently shown that garlic consumption is associated with decreased risk of gastrointestinal cancer. Since garlic is mainly eaten cooked (allinase inactivated) in most of these countries, allicin is unlikely to be the cause of significant gastrointestinal cancer reduction.

2. A major decrease in incidence of gastric cancer in China, particularly where large amounts of allicin-yielding fresh garlic are eaten, is associated with the antibiotic effects of garlic and its thiosulfinates (allicin) toward decreasing the amount of nitrate-reducing bacteria in the stomach and hence the amounts of carcinogenic nitrosamines formed. Therefore, allicin does appear to have an important role in prevention of gastric cancer.

3. Animal studies have indicated the importance of allicin since dietary fresh garlic, but not allinase-inhibited garlic, greatly decreased breast cancer incidence in C3H mice. A large number of animal studies

with allicin-derived DIALLYL disulphide and Diallyl sulphide, most using very large doses (100-200mg/kg), have shown positive effects toward decreasing carcinogen-induced cancer. Although allicin itself has not been tested, these studies indicate that allicin-derived compounds have the ability to affect cancer incidence.

HEPATITIS

Medical definition

This is inflammation of the liver and can be caused by viruses, toxic substances or immunological abnormalities. There are many different types, some transmitted sexually and others through an exchange of body fluids from an infected person. Hepatitis is very difficult to treat and every year in America alone 400,000 people develop a Hepatitis B or C infection. Many of the viruses that can cause hepatitis are from the herpetic family and will also include Epstein-Barr type viral infections. We already know allicin has the ability to destroy and prevent these organisms from flaring up in the human body, so allicin formulations will have some benefit. The complexity and very nature of hepatitis, however, makes this difficult to show clinically. As before, though, the natural boost to the immune system allicin can give will have some beneficial activity.

Treatment regimen

Take a large dose of allicin capsules – up to 2700 mg per day over a prolonged period. It may be worthwhile diluting the liquid by half and taking it internally every day. A half a fluid ounce twice daily is recommended.

LYME DISEASE

Medical definition

Lyme disease is the most vector-born infection in the US and the fastest growing epidemic in the world. The CDC (Centers for Disease Control) confirms that 'there is a considerable under-reporting' of

Lyme disease, maintaining that the actual infection rate may be 1.8 million, ten times higher than the 180,000 cases currently reported. Nick Harris, Director of the International Lyme and Associated Disease Society (ILADS), states 'Lyme is grossly under-reported. In the US, we probably have about 200,000 cases per year.'

Dan Kinderleher MD, an expert on Lyme disease, stated on the Today Show on June 10 2002 that the number of cases may be 100 times higher (18 million in the U.S. alone) than reported by the CDC. Conventional belief attributes Lyme disease to tick bites, though classical Lyme is caused by a bacterial spirochete called *Borrelia Burgdorferi*. More recent literature has shown it to be contracted also by mosquitoes, spiders, stinging flies, mites and fleas.

Some people may have contracted the disease through body fluids or from the placenta of their mother's womb or breast milk, rather than a tick bite. This means that the disease may be much more widespread than anticipated.

Borrelia Burgdorferi moves through the blood and tissue by means of an internal arrangement of flagellae that propel it in a corkscrew fashion. It can invade the various body systems and remain dormant for long periods only to cause illness months or years later when the immune system becomes compromised. Lyme spirochetes are masters of collagen tissue and can travel through it easier than through blood.

Spirochetes are regularly found in people who have been on antibiotic therapy for years. The Lyme organism is highly adaptable and can change from the spirochetal to encysted form, from which they can emerge from the red blood cell when conditions improve. This phenomenon is what makes Lyme disease so difficult to diagnose and treat. Lyme disease does not occur alone but together with a number of co-infections.

When the immune system becomes dysfunctional the patient then becomes infected with a multitude of secondary, bacterial, fungal, micro-plasma and especially viral infections. Also fungus thrives in Lyme-infected patients. The treatment needs to be broad-based and address all the co-infections in order to succeed. *Borrelia Burgdorferi* changes shape and form and this is perhaps its most insidious characteristic. International Lyme experts agree that:

“Only 10-20% of the total Lyme bacterial load is in the extra-cellular space in the spirochete form.”

“The remaining 80-90% of Lyme bacterial load is intercellular in the stealth cell-wall-deficient form, hidden from the eyes of the immune system, therefore preventing an attack.”

‘Most Lyme antibody tests are made to detect this 10-20% spirochete form and there are no conventionally accepted markers for the 80-90% of intercellular forms which constitute the majority of the Lyme bacterial load.’

“However there is a new test – CD-57 (a natural killer cell or aggressive white blood cell that seems to be specific for Lyme spirochete). It appears to be a reliable diagnostic marker for unresolved Lyme. CD-57 count begins to be reduced after the organism has established itself and adapted to its environment.

A recently completed controlled trial of chronic Lyme sufferers used stabilised allicin as the ‘natural antibiotic’ of choice together with a number of other sensible measures for long-term problems. Treatment for patients diagnosed who had CD-57 tests showed a marked improvement in their natural killer cells. One patient increased their CD-57 count from 40 to over 200 after 12 weeks of treatment. (Normally functioning immune systems have a CD-57 count of 100-200).

These ten Lyme patients, who had failed to improve with pharmaceutical treatments involving antibiotics and IV treatments, were chosen to begin an alternative treatment for chronic Lyme disease. In this study, their cases were compared with those of at least ten other patients of approximately the same degree of illness who continued to receive conventional therapy. Could alternative therapies make a difference in Stage 3 Lyme Disease with a uniform, comprehensive, natural protocol?

Antimicrobial Treatment – Allisure® containing capsules

Each patient started on 1 cap, 3 times a day and increased to 2 caps, 3 times a day or 3 drops of allicin liquid, 3 times a day and increased to 10 drops, 3 times a day. This is 1350mg of stabilised allicin.

Some treatment patients had to decrease because of the Herxheimer healing crisis (caused by toxins released by the large number of dead spirochetes and co-infections eliminated during the initial part of the treatment).

Testing Procedures

SELF HEALTH ASSESSMENT - All ten treatment patients in the pilot study were asked to record on a scale of 1 – 10 the degree of severity of their 10 most problematic symptoms every 2 weeks through 12 weeks.

SF8 FORM - Each patient also filled out on each visit an SF8 form (which is a validated historical questionnaire developed by the Medical Outcomes Trust of Boston)

pH TESTING - By using a litmus paper which measures the concentration of positive charged ions in your body fluid. The more positive charged hydrogen ions present, the more acidic. The fewer the

hydrogen ions present, the less acid. The pH of saliva and urine was taken every 2 weeks on an empty stomach.

The average pH of saliva on the treatment group was 7.0; average pH of urine was 5.5. At the end of the study average saliva was 6.4 and average urine was 6.2.

Our bodies have an internal environment, our biological 'terrain', which comprises the interstitial fluid that nourishes the 100 trillion cells of the body. Our biological terrain is based on the composition and quantity of fluids our cells live in, which include blood, lymph, gastric juices, etc. When these fluids are in proper balance, our cells flourish. When they are out of balance, they create an environment conducive to the growth of fungi, bacteria, viruses and parasites. It is important to understand the pH of your blood, which is critical to your life and has only a very small degree of tolerance for variation. These fluids serve as indications of the health of our biological terrain.

Acid/alkali measurement is called pH or Potential of Hydrogen. This measurement indicates the acidity or alkalinity of your internal, biological terrain. Specific pH levels are necessary for optimum digestion and absorption. Ideally the pH of saliva should average 6.5 and the urine will fluctuate between 6.0 – 7.0. Prior to an immune dysfunction, there is a pH imbalance to reflect this condition.

Refractometer (sugar) – A refractometer is used for this test since it records all the sugars in the urine (blood sugar tests only record glucose). It is considered the fuel gauge, or amount of possible energy available. The sugar reading expresses the ability to digest and store sugar properly. The optimum maximum number, at least 3 hours after a meal, should be 1.5. This represents the amount of dissolved solids in the form of complex and simple sugars. The units are expressed in sugar brix. One degree brix is equal to one percent sugar in the liquid

being tested - in this case urine. Therefore the ideal carbohydrate number of 1.5 means 1.5 Brix or 1.5% sugar in the urine sample. If sugar is too high (over 1.5), the body may be insulin-resistant and form excess gas, yeast or fungus. If too low, look for hypoglycaemic conditions.

The average SUGAR BRIX of the treatment patients was 3.6 at the beginning of the study. At the end, 1.9.

Conductivity – A conductivity meter was used for this test. It gives vital information about the flow of electricity or voltage in the body. It can also indicate the congestion and stagnation within the body's tissue measured through a small amount of urine. This reading involves the minerals or salts in your fluids. Minerals are needed for many critical actions and reactions in the body and minerals need to be balanced. Only when your body is depleted of good minerals do heavy metals attach themselves to cell walls. When fluids become congested with too many minerals (toxins), stagnation and congestion may occur which limits the cell's ability to function properly. With too few minerals, the body can't hold its electrical charge and cellular dysfunction results.

The average conductivity of the treatment patients was 9.5 at the beginning. At the end, 7.4.

Darkfield Microscopy – Through the advent of technological advances in microscopy, new discoveries have been proved by such leading researchers as Royal Rife, Gaston Naessan, Dr Gunther Enderlein, Majid Ali MD, and many others. In the rapidly emerging field of what is known as live cell analysis, an understanding of biology as a holistic science has emerged. Health imbalances in the body may be averted by observing the state of ever-present floras found in the blood and by correcting the milieu that allows floras to

remain in the regulatory forms or move into pathogenicity. Or conversely, to be reduced from pathogenic forms back down to regulators. These observations are made in what is known as Darkfield Microscopy. Examinations of live blood in a darkfield are valuable for recognizing imbalances in the body and for tracking improvement.

Under Darkfield Microscopy, when the red blood cells are crushed, the intercellular stealth pleomorphic Lyme bacteria can be seen in these Lyme patients.

The majority of the treatment patients had:

- Erythrocyte Aggregation and Rouleau - red blood cells clumped or stacked together
- Fibrin-congestion in the circulatory system associated with blood clotting disorders
- Poikilocytes - Free radical damaged or deformed red blood cells with the appearance of bottle caps
- Many of their white blood cells were immobile/non-viable

At the end of the study the majority of the treatment patients had red blood cells which were negative-charged (not clumping); white blood cells were Phagocytic/Viable with little or no Fibrin and Poikilocytes. When the RBC's were crushed, the intercellular Lyme bacteria spirochetal and cystic forms were greatly reduced. The darkfield reflected the positive results the treatment patients were experiencing.

Biological Terrain is not a new concept but was part of a great debate in the early 1800's. The argument that changed the course of medicine was Louis Pasteur, who had the opinion that non-changeable microbes caused disease (mono-morphism). On the other side was Antoine Bechamp who stated that the microbe changed according to

Biological Terrain. Not until his deathbed did Pasteur change his mind: “The microbe is nothing, the terrain is everything”.

Pasteur’s model was unfortunately accepted and today we have Germ Theory. Maintaining the proper balance in the body’s pH, however, (Biological Terrain) can still be shown positively to affect all major body systems. A Lyme patient with a strong immune system will be able to defend themselves better against outside invaders. The fact is, many people are bitten by ticks and mosquitoes and don’t have health problems that are associated with Lyme disease. Further work needs to be done but this initial study is clearly very good news for those suffering from a condition which has proved notoriously troublesome to treat.

MRSA INFECTION

(Methicillin Resistant Staphylococcus Aureus)

Medical definition

The bacteria Methicillin-Resistant Staphylococcus Aureus (MRSA) and several other strains of bacteria live in our gut, known as ‘alert organisms’ (also called gentamicin-resistant organisms). In most cases these bacteria cause no problems but when they enter another body system such as the blood or urine, they may cause illness. When colonised, people carrying the bacteria in their nose, throat, gut or on their skin do not show symptoms. However, if the patient has a temperature and/or redness of a wound, this may indicate an infection. These bacteria are resistant to most conventional antibiotics.

Patients now get released from hospital too soon, even before wounds have properly healed. Speaking with my own doctor recently, he could name eight patients in our local area who had a resistant MRSA infection at home trying desperately to get rid of it. Because of this high incidence of patients with unresolved wounds, we embarked upon a campaign to bring the potential benefits of stabilised allicin

directly to these patients. Whilst not being allowed to advertise in any form by the regulatory authorities, we decided the only option was to find a small number of patients who would volunteer to become case histories, who could be closely followed to see if their conditions could be resolved. The first cases concerned three patients, whose initial reports were presented once they had completed a course of treatment.

These courses consisted of stabilised allicin capsules (450mg dosed 3 times daily); spraying liquid allicin (1000 mcg ml⁻¹) onto the affected areas once per day applying allicin cream/gel (500 mcg ml⁻¹) to the infected area once daily. Patients were screened and nasal and wound swabs taken and tested for MRSA prior and during treatment. All patients were nose-and-wound-swab MRSA-positive prior to treatment. All were over 60 years of age and had either major surgery or long-term skin infections leading to the formation of ulcers infected by MRSA. Two of the MRSA infections were community acquired and one hospital acquired. The strains isolated from each patient were tested *in vitro* against stabilised allicin and all were susceptible.

Patients reported an improvement in their condition after 2 and 6 weeks treatment and the infections resolved in 3 to 4 months. Although the timescales required for treatment may be longer than those normally required using antibiotics, the initial relief from weeping ulcers and pain was much quicker. It should be noted these the patients had been receiving unsuccessful treatment with antibiotics for months or years prior to treatment with stabilised allicin formulations. The dose of Alli-C is 8-10 capsules daily plus gel.

A possible reason for the initial relief from symptoms could relate to the reported activity of allicin extracts to neutralise bacterial exoenzymes *in vitro*. In initial studies we have demonstrated that even after brief exposure, allicin can reduce the activity of microbial enzymes. The activity of alcohol dehydrogenase in producing NADH

from NAD⁺ reduced as allicin in the solution increased. It appears that allicin has the potential to reduce the activity of extra-cellular virulence factors since many patients got relief from their symptoms before the MRSA was fully removed from the lesion site.

Generally the product formulations were very well tolerated and did not appear to cause any side-effects. Many patients have continued on long-term treatment with capsules to try and prevent symptoms from recurring. It seems that long-term treatment can improve the immune system significantly.

Details concerning each of these case histories were submitted to a new body set up by the UK Government called the Rapid Review Panel. This professional group is supposed to review and fast-track any potential solution to reducing infection rates in NHS hospitals, so the manufacturers of stabilised allicin products were confident that they would receive a favourable review. However after many months gathering the data and complying with the requisite form-filling this panel of experts reported that because the material has a pharmacological action – i.e. it actually enables your body to kill the infection, these products would have to be referred to the Medicines Agency to gain a licence. All very well if you have around £1.5 million to comply with all the requirements to produce a pharmaceutical medicine. What a waste of time!

Case 1 female

An 82-year-old female (allergic to penicillin) with cellulitis had contracted MRSA at home – confirmed from a swab by her GP. The disease affected both forelegs each with about 6 wound areas. One of the wound sites measured 2 inches by ½ inch. Despite the use of Bactrian Cream, Epidermis (an emollient) and a course of Erythromycin (250mg), the infected sites did not respond. Swabs analysed by AIL/UEL in May 2004 confirmed the presence of MRSA in

her nose and on her legs. A recommendation by AIL/UEL was made as follows:

- Take 3 x 450mg capsules per day
- Spray some allicin liquid daily onto the affected areas of her legs
- Apply some allicin cream/gel daily onto the affected areas of her legs

Within 6 weeks (June 2004), some wounds had healed and there was a dramatic change in her condition. By August 2004, further swabs from her nose and legs had shown that MRSA was not present and steady recovery was being maintained. By November 2004, all wounds had scabbed over and some had completely healed. No side-effects were reported from taking the stabilised allicin products.

Case 2 female

An 86-year-old female has a long-term issue with leg ulcers and contracted MRSA at home. Over a period of 5 years (1999 to 2004), courses of Penicillin were ineffective. The patient was also prescribed pain-killers (Co-proxamol, Ibuprofen), beta-blockers (Betabloc), diuretics (Bendrofluazide), anti-ulcer (Ranitidine) and anti-angina (Isosorbide Mononitrate) medication. Upon an approach to AIL/UEL in January 2004, two swabs were taken from the nose and the ulcers. These swabs confirmed the presence of MRSA. A recommendation by AIL/UEL was made as follows:

- Take 3 x 450mg capsules per day
- Spray some allicin liquid daily onto the ulcers
- Apply some allicin cream/gel daily onto the ulcers

Within a few weeks, the condition of the ulcers showed improvement. By April 2004, a further set of swabs from her nose and

ulcers had shown that MRSA was not present and a steady improvement was being made. Although the ulcer was still present, by July 2004 further swabs showed that the MRSA was still absent. No side-effects were reported from taking the stabilised allicin products.

Case 3 male

A 62-year-old male contracted MRSA in intensive care after a bowel operation. The manifestation of this was an abdominal wound the 'size of a saucer'. He was isolated and spent 5 months in hospital. Despite specialist dressings and courses of Trimethoprim and Flucloxacillin, the wound did not heal. MRSA was still present in December 2003. Swabs analysed by AIL/UEL in February 2004 confirmed the presence of MRSA in the wound and nose. A recommendation by AIL/UEL was made as follows:

- Take 3 x 450mg capsules per day
- Spray some allicin liquid daily onto the wound
- Apply some allicin cream/gel daily onto the wound

An improvement in the condition of the wound was noticed within 14 days of taking allicin. By the end of March 2004, the wound had reduced to about 2.5 inches in diameter and was healing well. A further swab taken from the wound in June 2004 showed that MRSA was still not present and, at this time, the patient reported that the wound continued to shrink and heal naturally. No side-effects were reported from taking the stabilised allicin products.

The aforementioned three case histories are now just the tip of an iceberg of patients who have had resistant infections completely resolved by stabilised allicin products in the UK, USA and Canada. The pictures below are from a young lady in Canada who had major problems with these wounds on her back following surgery.

Despite many courses of antibiotics and numerous visits to various specialist hospital units in Canada, this little girl was facing the prospect of yet another operation to replace the infected metalwork. Her parents were naturally concerned as she has very brittle bones as well. However, having read about stabilised allicin her father contacted me and I was lucky enough to be able to visit him in Canada to hear the case history firsthand. As before, we recommended a course of at least 1800 mg of allicin powder per day plus occasional use of the spray and gel formulations. Within just a few weeks, our little lady was completely healed!

We did have it confirmed that the wound was infected with MRSA and that post treatment she was free from infection. Her parents were delighted!



Figure 1 - Sophie's wound before treatment

Hello Peter,

I trust you are well. Sophie's back is healed. There appears to be a very small scab about the size of a pin head.

Also, she asked me to take her wall climbing. She hasn't done that since before her surgeries in 2004. She accomplished one full climb (40') with some assistance from me (I was belaying her), plus some other attempts.

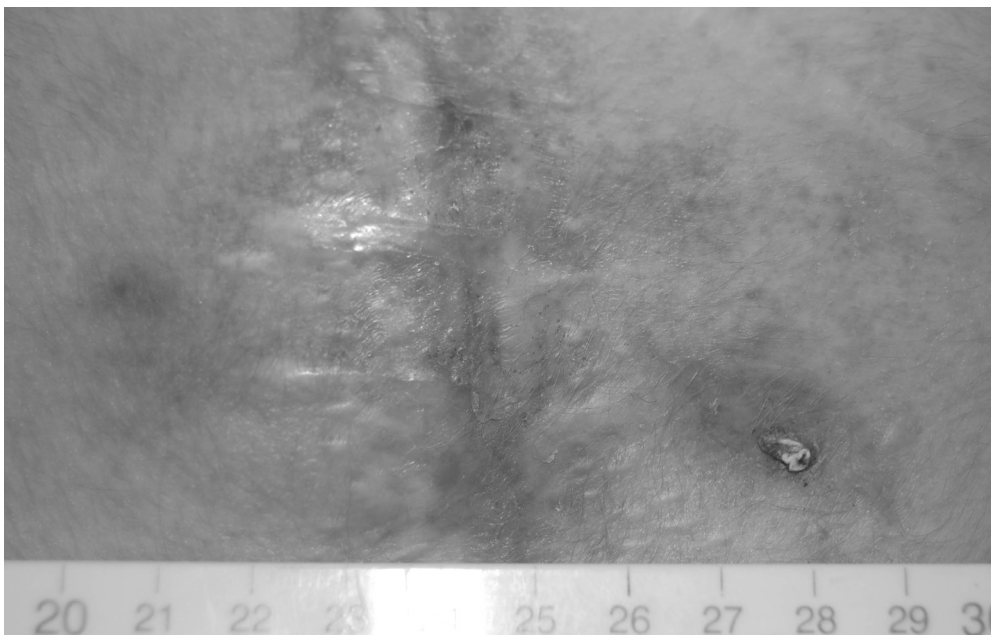


Figure 2 - Sophie's healed wound after treatment

A further clinical paper has been published and a summary is reproduced below.

Dr R R. CUTLER and Dr P. WILSON, respectively of the University of East London, School of Health and Bioscience, Stratford Campus, Romford Road, London and Department of Medical Microbiology, St Bartholomew's Hospital, West Smithfield, London had their work published in *The British Journal of Biomedical Science* 2004:61(2)

INTRODUCTION

Control of the spread of antibiotic-resistant bacteria and the treatment of infections caused by them is a major problem worldwide. In particular, methicillin-resistant *Staphylococcus aureus* (MRSA) presents major infection control problems for patients and hospital staff, as its incidence in Europe has risen from 3% in 1992 to 37% in 1999. Topical agents are important in controlling the carriage and spread of MRSA. Mupirocin (pseudomonic acid), a fermentation product produced by *Pseudomonas fluorescens* (NCIB 10586), is a standard product used to deal with MRSA carriage and to prevent its spread. It has also proved to be an effective treatment for skin infections and plays a crucial role in the control of MRSA outbreaks.

However, resistant strains were described soon after its introduction. Moreover, the increased use of Mupirocin, especially for chronic infections, has led to an increased incidence of resistance. In a recent survey from Spain, levels of Mupirocin resistance in clinical isolates was reported to have increased from 7.7% in 1998 to 19% in 2000 and some hospitals have reported incidences as high as 63%.² The continuing spread of MRSA and the increase in Mupirocin-resistant strains highlight the need for alternative topical agents. Garlic and its extracts have been used to treat infections for thousands of years. Allicin (the name being derived from that of the garlic species *Allium sativum*) is considered to be the main biologically active antimicrobial phytochemical produced in garlic extracts, and was first recognised as such in 1944. Allicin is an oxygenated sulphur compound, formed when garlic cloves are crushed. Alliin is the stable precursor of allicin and is stored in compartments in the plant that separate it from the enzyme allinase (also called alliin lyase). When crushed, they mix and alliin is converted rapidly to allicin by the action of this enzyme. The antibacterial activity of allicin was reviewed by Ankri and Mirelman in 1999.

Pure allicin (allyl 2-propenethiosulphinate) is highly volatile, poorly miscible with water and has the odour of freshly crushed garlic. In order to produce a stable agent that can be used in topical formulations, an aqueous allicin extract is needed. In this study, a purified aqueous extract of allicin, isolated from a natural source by a patented cold aqueous extraction method (Allicin International, Rye, East Sussex, UK) is used. This extract is tested against Mupirocin-resistant and Mupirocin-susceptible strains of MRSA. Two formulations, liquid allicin and liquid allicin mixed in a gel formulation, are tested.

The increasing prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA) in hospitals and the community has led to a demand for new agents that could be used to decrease the spread of these bacteria. Topical agents such as Mupirocin have been used to reduce nasal carriage and spread and to treat skin infections; however, resistance to Mupirocin in MRSA is increasing. Allicin is the main antibacterial agent isolated from garlic, but natural extracts can be unstable. In this study, a new, stable, aqueous extract of allicin (extracted from garlic) is tested on 30 clinical isolates of MRSA that show a range of susceptibilities to Mupirocin. Strains were tested using agar diffusion tests, minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC). Diffusion tests showed that allicin liquids produced zone diameters >33 mm when the proposed therapeutic concentration of 500 mcg/mL (0.0005% w/v) was used. The selection of this concentration was based on evidence from the MIC, MBC and agar diffusion tests in this study. Of the strains tested, 88% had MIC's for allicin liquids of 16 mcg/mL, and all strains were inhibited at 32 mcg/mL. Furthermore, 88% of clinical isolates had MBC's of 128 mcg/mL, and all were killed at 256 mcg/mL. Of these strains, 82% showed intermediate or full resistance to Mupirocin; however, this study showed that a concentration of 500 mcg/mL in an aloe vera gel base was required to produce an activity equivalent to

256 mcg/mL allicin liquid. In conclusion, the present study demonstrated that liquid and gel formulations containing allicin are active against *S. aureus*, including MRSA strains, showing both high and low levels of resistance to Mupirocin. The allicin cream formulation showed reduced activity compared with allicin in water. At 500 mcg/mL, however, the cream was active against all the organisms tested, suggesting that this therapeutic concentration compares well with the 20,000 mcg/mL Mupirocin currently used for topical application.

Minimum Inhibitory and Minimum Bactericidal Concentrations (MIC/MBC) of Allicin against 30 clinically isolated strains of MRSA

	MIC 16 mg/l	MIC 32 mg/l	TOTALS
MBC 128 Mg/l	76%	12%	88%
MBC 256 Mg/l	12%	0	12%
TOTALS	88%	12%	100%

Again as a part of this work the patient shown before and after treatment was naturally delighted to find a natural antibiotic that works better than every other pharmaceutical antibiotic ever marketed – and one or two that have not yet been ‘approved’ for use!



Leg amputation: Before treatment with stabilised allicin liquid, cream and capsules, using the holistic approach of healing from within as well as without.



After several months' treatment the wound is completely healed.

This work was presented at the biggest medical microbiological meeting in Atlanta Georgia in 2005. The patient who started all this activity was Deborah Brown who had a problem similar to the little girl from Canada. Deborah read about the work on allicin and I made up some early formulations for her to try. Her mother reports their experience below.



Leg amputation infection – before and after allicin treatment.





American Society for Microbiology

Atlanta

105th General Meeting
June 5-9, 2005

Testimonial

'Her [Deborah's] wounds are on her spine. One close to the top, which is approx .2cm by 1.5cm, is overgranulated and weeps. The other is approx. 0.75cm by 0.5cm and near her waistline. This is overgranulated but only weeps a little. She had a major spinal operation two years ago and although she has had antibiotics through a Hickman line and a wash-out, so far nothing has worked. She has been on oral antibiotics and creams for several months but nothing has been able to shift the MRSA infection. The only option available to her via the hospital is to have all the metalwork removed. As you can imagine she does not want to go back into hospital, nor does she want the metalwork removed. We would be very grateful if you could produce a cream and some capsules for her. If you require any further information, we can speak to the district nurse on Saturday, as she dresses her wounds then, whilst I do them during the week.'

Just a few weeks later

Dear Peter

I had not been in touch as mum said she had emailed you. I don't think she wanted to get carried away but the news is very exciting - I no longer have any infection in my back and it is all thanks to the treatments you so generously suggested. Having had these two wounds on my back weeping for 2 years, I don't know quite how to thank you and hope I get the opportunity to thank you in person at some point. I will also be telling anyone who may benefit from allicin how miraculous it is. I am going to the hospital on Thursday. I am not sure if my consultant can quite believe what has happened, as he, along with some of my district nurses, are not too happy about the thought of using alternative remedies. When I think how many courses of antibiotics I have been instructed to take in the last 2 years and how many biopsies came back positive for MRSA, I am not surprised that the medical staff cannot believe it!

Thank you once again for all you have done. You saved me from another horrendous operation. Maybe I can repay you in some way. For instance, if it would be of any benefit, I could write something about my experience with MRSA and how allicin cured it, if that might help promote the product - just a thought.

Yours eternally grateful

Deborah

SARS (Severe Acute Respiratory Syndrome)

Medical definition

The symptoms of SARS are a lot like pneumonia or the flu. People get a very high fever – at least 100.4 degrees. They also usually have shortness of breath or other problems breathing and a dry cough. Some people get other symptoms including a headache, stiff or achy muscles and a loss of appetite, fatigue, a rash and diarrhoea. Doctors believe that it is spread primarily by tiny droplets that get airborne when someone sneezes or coughs, or by contact with other bodily fluids such as blood and faeces. Most people who have contracted SARS outside of Asia have either recently travelled to Asian countries where it was spreading or had close contact with someone who recently returned from there or became infected by someone who travelled there. The disease is caused by a microbe known as a corona virus. Corona viruses usually just cause the common cold but can cause serious respiratory illnesses in animals. Antibiotics don't seem to work, which is usually the case with virus-caused diseases. All allicin formulations – that is powder, liquid and cream, have been requisitioned in America for testing by The National Institutes for Health (NIH), the National Institute for Allergy and Infectious Diseases (NIAID) and The United States Army Military Research Institute for Infectious Diseases (USAMRIID). They are performing tests against a wide range of microbial species including SARS, West Nile Virus, EEE (Eastern Equine Encephalitis), Smallpox, Vaccinia and Variola species.

TUBERCULOSIS

Medical definition

An infectious disease caused by the bacterium *Mycobacterium tuberculosis*, formerly known as consumption or wasting disease. *Mycobacterium tuberculosis* (TB) can lay dormant for many years but chronic infection is spread very easily by coughing or sneezing. Unfortunately TB is once again on the increase as the number of cases reported in major international cities has more than doubled in the last 5 years. This is partly due to the influx of refugees and asylum-seekers from parts of the world where TB is endemic. It is reported that London is the TB capital of Europe and New York has set up special hospitals just to treat resistant cases. National Geographic TV report that in Russia, 4 million people are infected with TB, many of whom are carrying drug-resistant strains and just walking the streets. Unfortunately a large number of Russian prisoners are also infected and do not qualify for treatment, so when they are released they are able to spread the disease further.

Recently a number of strains of MDR TB were isolated from patients in a London teaching hospital. The patients are often treated by combinations of antibiotics including Streptomycin and Rifampicin. Any growth in the presence of an antimicrobial is significant with MDR *Mycobacterium tuberculosis* and growth was noted in all cases where strains from these patients were treated with Streptomycin. However no growth was found where strains were treated with allicin liquid.

All strains isolated were completely killed off by allicin liquid. Since *Mycobacterium tuberculosis* tends to present mostly in the lungs, we would expect allicin formulations to work very well. This is because allicin has a propensity for the lung tissue and is very useful in chest infections and other lung diseases like asthma. Allicin has also

been found to boost the immune system and allow the body to begin fighting off serious infection.

Treatment regimen

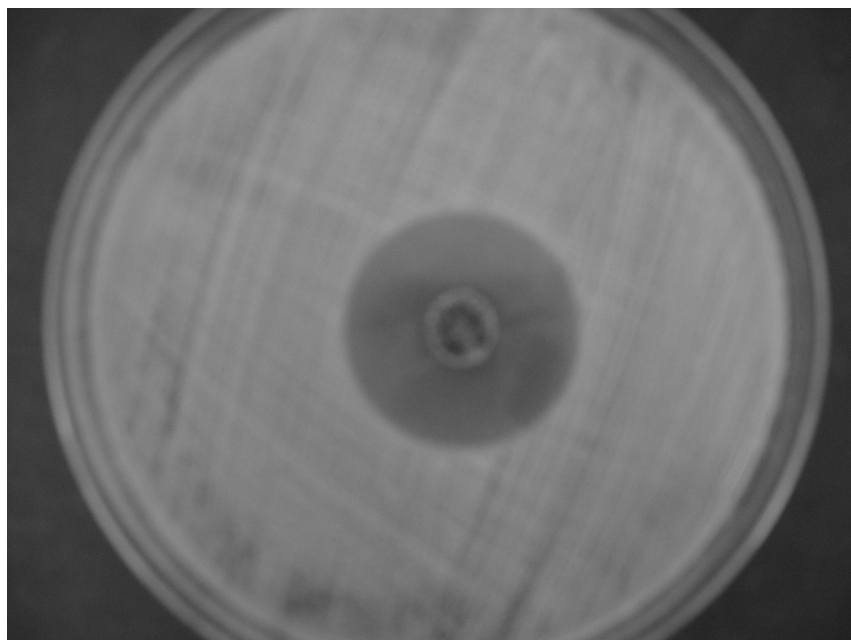
Begin by taking allicin liquid several times a day. Dilute allicin liquid: 1 part allicin to 2 parts water and take 10ml (two teaspoons full) every day. Add up to 2700 mg of allicin powder capsules daily and continue this routine for a period of several weeks until any progress is noted.

What can allicin be combined with?

Stabilised allicin powder and liquid formulations can be easily combined with other ingredients and have often been shown to exhibit a strong degree of synergy – making the combination more effective than either agent alone or dosed separately.

GINGER

Allicin powder formulates extremely well with ginger. The combination is not only biologically active but also has a major benefit on the management of arthritis. Results have been detailed in this book!

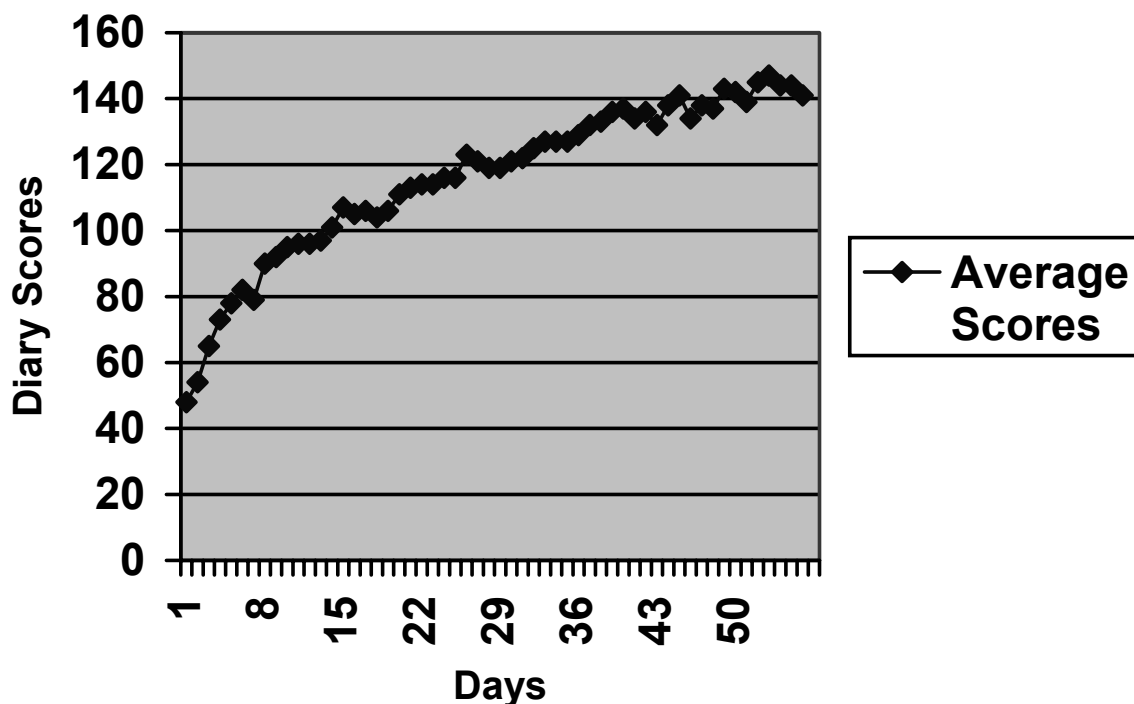


The picture shows just how able this combination is in killing drug resistant bacterial species such as MRSA. To confirm this, independent tests were completed at the University of East London. The powder combination

was assayed according to standardised procedure published in the *British Journal of Biomedical Science* 2004 (61) 2 (scientifically approved to FDA and MHRA guidelines). The powder combination was well mixed and extremely biologically active against both the control strain MRSA UEL102 and the test strain UEL103. Both strains are multi-drug resistant to methicillin, ampicillin and penicillin but clearly very sensitive to our Alli-C formulation.

PROBIOTICS

This is probably the best combined formulation so far with major benefits to people with poor digestion, food intolerances, irritable bowel syndrome and a range of digestive disorders. The graph below shows just how quickly patients report improvement when taking allicin and probiotics with digestive enzymes added as well.

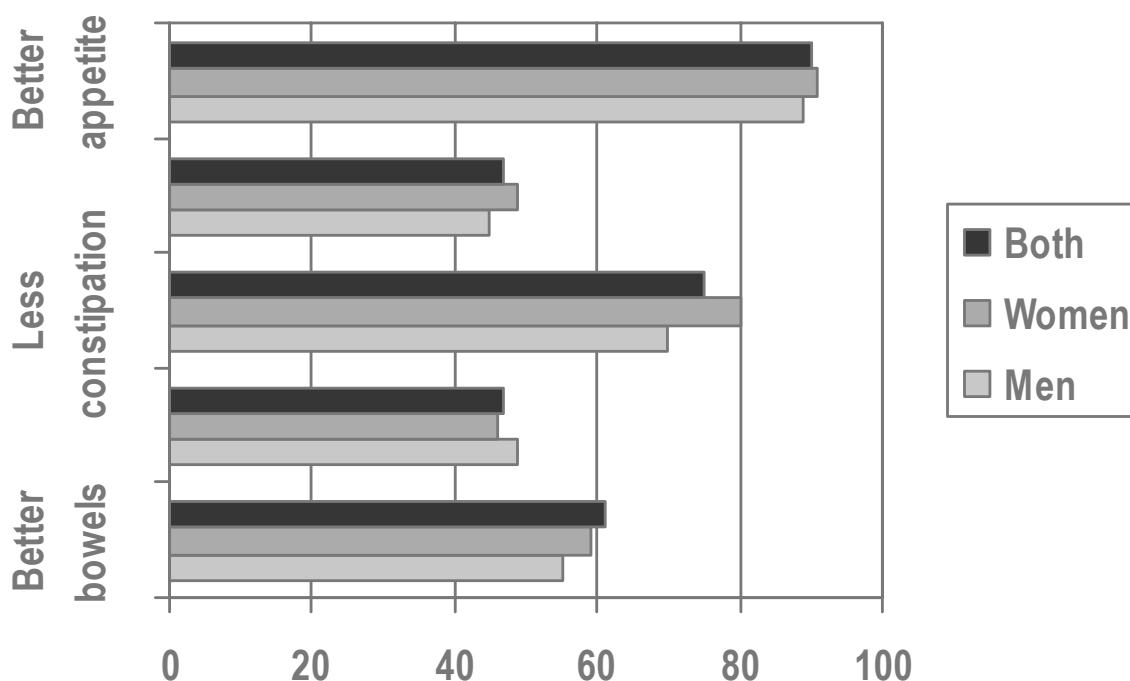


Within seven days, treatment patients have virtually doubled their subjective score describing how they feel (see chart). This translates into many benefits over a relatively short period of time as shown. Allicin can be successfully added to many different plant based extracts, displaying synergy. Other suitable additions to stabilised allicin include, vitamin C, beta-sitosterol, beta glucan, ginseng, ginkgo, vitamins B and C, Swedish flower pollen, goldenseal and other immune-boosters.

Allicin can be added to ALL pharmaceutical medications including antihypertensives, statins and blood-thinners including Warfarin and Coumadin. It is however sensible to stop allicin

treatment if you are going into hospital for an operation about 3 days before you go in – then re-start immediately after your operation to help prevent infection.

As discussed earlier, allicin also shows great synergy with pharmaceutical antibiotics especially the aminoglycosides. This amazing action can therefore offer the opportunity to reduce the dose of drugs used which can often cause side-effects. Remember that over 7 years use of allicin in 14 countries the number of side-effects reported can be written on a postage stamp!



What can you safely add to allicin and get more activity?

A long list of natural agents, many of which have already been added to allicin, have shown a significant synergy. This means adding a range of probiotic species to allicin, for example, can improve performance for people with serious digestive complaints. Adding Vitamin C is ideal to enhance the antioxidant activity of the two agents. The list is by no means exhaustive but you can safely add

agents including: vitamin C, probiotics, ellagic acid, ginger, echinacea, vitamins A and E, Swedish flower pollen, black walnut hulls, wormwood, grapefruit seed extract, broccoli, garlic powder, digestive enzymes, hyaluronic acid, astragalus, ginkgo biloba, rosehips, gentian, hypericum, horse chestnut, ginseng, green tea, beta sitosterol and phosphatidyl serine.

Allicin for animals and insects

INTRODUCTION

Many venues encourage us to come in contact with animals, resulting in millions of human-animal contacts each year. These settings include county or state fairs, petting zoos, animal swap meets, pet stores, zoological institutions, carnivals, farm tours, livestock-birthing exhibits, educational exhibits at schools and wildlife photo opportunities. Although many benefits of human-animal contact exist, infectious diseases, rabies exposures, injuries and other human health problems are of concern. Rabid or potentially rabid animals in public settings can result in extensive public health investigation and action. Infectious disease outbreaks reported during the previous decade have been attributed to multiple organisms, including *Escherichia coli* (*e-coli*) 0157:H7, *Salmonella*, *Coxiella burnetti*, *Mycobacterium tuberculosis* and ringworm. Such incidents have substantial medical, public health, legal, and economic implications.

This however pales into insignificance when you begin to look at the number and variety of diseases and illnesses than can and do often afflict all types of animals. Infectious organisms love animals and some animal habits encourage the quick replication of disease producing microbes and parasites.

With everything described so far in this book, it will not be much of a surprise to learn that stabilised allicin formulations are also extremely beneficial to all animals! Often when new compounds are discovered or manufactured (e.g. pharmaceutical agents) they are initially tested on animals. Although this process is now very strictly regulated and only essential experiments are carried out on animals bred specifically for research purposes, this still causes great concern for animal lovers. So how refreshing to find out that stabilised allicin

was tested on human beings before being exposed to the animal population!

So far the results are quite amazing and of course the major benefit of exposure to a wide variety of animals is that they know nothing about a placebo effect – it either works or it doesn't. Data, reports and testimonial evidence show just how good allicin is for animals and insects. In today's world we are constantly reminded of the potential for diseases to jump species from animal to man and this has caused various nations to start stockpiling medicines that may or may not be effective should a major pandemic break out. Nobody seems to be looking at new agents and animal management schemes to *reduce* incidence of infectious disease in the animal and insect population. It is my sincere hope that allicin may have a major part to play in preventing and treating disease in animals, birds, insects and man for the future.

For the following digest, I am grateful to Mr Norman Bennett of Allicin International Limited who has organised and collected data and encouraged the use of allicin in a wide variety of species which has led to some fascinating results.

THE HUMBLE HONEY BEE

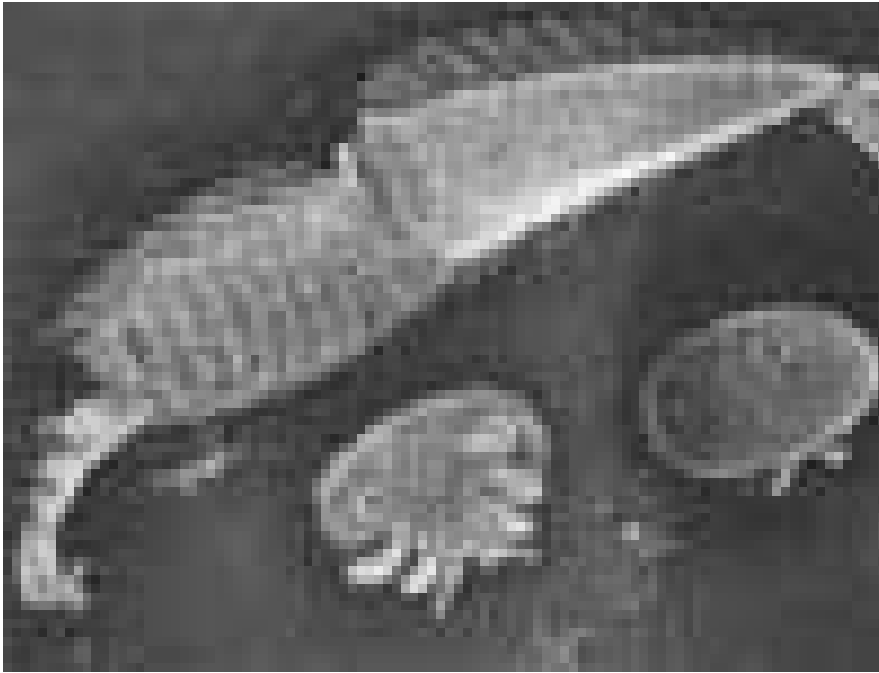
Why are bees so important to us and the environment? Did you know that bees are pollinators vital to our food chain? One third of the food we eat would not be available but for bees. Bees, like other insects, are part of a food chain. The limbs and mouthparts of bees are neat examples of adaptation and engineering. The harvest from honeybees of honey, pollen, wax and propolis has nutritional, craft, manufacturing and medical applications.

In the UK about 70 crops are dependent on, or benefit from, visits from bees; in the USA it is well over 100. In addition, bees pollinate the

flowers of many plants which become part of the feed of farm animals. The economic value of honey bees and bumble bees as pollinators of commercially grown insect-pollinated crops in the UK has been estimated at over £200 million per year in the UK alone.

Bees are in danger of disappearing from our environment. Farming practices continue to disturb the natural habitats and forage of solitary and bumblebees at a rate which gives them little chance for re-establishment. The honeybee is under attack from the Varroa mite and it is only the treatment and care provided by beekeepers that is keeping colonies alive. Most wild honeybee colonies have died out as a result of this disease.

The Varroa mite, an ectoparasite of honey bees, was first described by Oudemans (1904) from Java on *Apis cerana*. In 1951, it was found in Singapore. In 1962-63, the mite was found on *Apis m. mellifera* in Hong Kong and the Philippines (Delfinado 1963) before spreading rapidly from there. Adaption to a new host (*Apis m. mellifera*), the importation of queen bees from infested areas and the movement of infested colonies of bees for pollination led to the rapid spread of this mite. Following the find of a single Varroa mite in Maryland in 1979, the Division of Plant Industry and H.L. Cromroy, University of Florida, made an inspection of Florida bees in 1984. The Varroa mite was not found at that time but in 1987 it was detected in Wisconsin and Florida. It remains unknown how or when the Varroa mite was introduced into the continental USA. In Florida the Varroa mite has been found on flower-feeding insects *Bombus pennsylvanicus* (Hymenoptera: Apidae), *Palpada vinetorum* (Diptera: Syrphidae) and *Phanaeus vindex* (Coleoptera: Scarabaeidae) (Kevan et al. 1990). Although the Varroa mite cannot reproduce on other insects, its presence on them may be a means by which it spreads short distances.



*Varroa mite - adult
female ventral and
dorsal views*

These factors, coupled with a decline in the number of beekeepers worldwide, have prompted the educational establishments to cooperate with beekeeping associations to help change attitudes to the vital importance of bees. A new generation must understand the value of bees and the threats to their existence. This must include any natural method of preventing infection or infestation from pathogens like Varroa that can decimate hives across the world.

The planet depends on bees and stabilised allicin liquid could play a vital part in the preservation of bee colonies everywhere. To this end, a serious amount of clinical research has already been completed.

**Summary report for the field testing of Allisure™
as a preventative treatment for the control of
Varroa mite, *Varroa destructor***

The objective of this cooperative research project was to determine the efficacy of the natural antibiotic allicin against the honey bee bacterial pathogen: the Varroa mite, *Varroa jacobsonii*. Novel improvements in extraction and purification methods have produced a

natural allicin in a stable pure form, (Allisure™ liquid and powder, Allicin International Limited UK). Allisure™ liquid formulations were found to be highly active against a wide range of microbial isolates. Considering environmental and human health concerns, use of natural antibiotics could be an alternative solution to entomopathogenic microbes and in reducing severe infestations of the Varroa mite.

The test was performed over an eight-week period during which the maximum temperature was 29.0°C (84.3°F), minimum temperature was 3.2°C (26.3°F) and average rainfall was 2.26". Thirty hives with a brood chamber and one to two supers were randomized at a bee yard approximately nine miles north of Alachua, Florida. The hives were infested with moderate populations of Varroa mite but were free of American Foulbrood.

Treatments consisted of (1) a single pre-infection treatment of 250 ppm Allisure™ liquid in corn syrup; (2) a single pre-infection treatment of 250 ppm Allisure™ liquid in corn syrup followed by two additional treatments at seven-day intervals; (3) a control of corn syrup liquid only. Ten replicate hives were used for each treatment and the control.

Protocol for Varroa

Varroa mite collection boards were placed on the bottom of all hive bottom-boards 24 hours prior to the initiation of the Allisure™ treatment. The boards were removed on the day of Allisure™ treatment and data collected as the number of mites per board. On day six after treatment, Varroa mite collection boards were placed and removed 24 hours later. On day twenty-nine after treatment, Varroa mite collection boards were placed and removed 24 hours later. On day sixty after treatment, Varroa mite collection boards were placed and removed 24 hours later.

Results

Effect of Allisure™ on reducing Varroa mite populations was promising. The results of collection-board mite-counts for four collection dates are presented in Table 1.

Table 1 - Mean Varroa Mite Counts from Collection Boards

Treatment	Pre-treatment	Day 7	Day 30	Day 60
Control	29.60a	34.10a	46.10a	66.50a
Single Allisure™ Treatment	19.20a	13.20b	25.40ab	46.40ab
Multiple Allisure™ Treatments	25.90a	21.30ab	20.20b	29.00b

SIGNIFICANCE WAS ONLY GAINED IN THE MULTIPLE TREATMENT GROUP AFTER 60 DAYS

Pre-treatment collection-board mite-counts showed no significant difference between mite populations for any of the combined means of the treatment hives. Seven days later, the Allisure™ single treatment had significantly fewer mites than the control. However, the multiple treatments at this point were essentially the same as the single treatment but were not significantly different than the control, though numerically lower. Mite counts 30 days after treatment indicated significantly lower numbers in the multiple Allisure™ treatment but not in the single treatment. The single treatment did have numerically lower numbers. The results at 60 days after treatment were essentially the same as 30 days. Both the 30 and 60 day results did indicate a 2 fold drop in mite numbers using the multiple Allisure™ treatments compared to the control.

Data were analyzed by dates and treatments using Statistix® ANOVA and means separated using Tukey's HSD (P=0.05). Additional work is ongoing at this time to determine more valid

estimates of hive mite populations prior to any type of honey bee research. This information is vital in determining the degree of mite control provided by any treatment and for determining if economic thresholds have been reached. When this work is completed, additional work on Varroa mite will be conducted using higher rates of Allisure™ for comparison with this initial test.

DOGS AND CATS

Generally speaking, stabilised allicin formulations are well suited to these domestic pets. Powder can be added daily to the animals feed at a rate of about 90-180 mg per day for a cat or small dog. Larger animals will require a bigger dose that can be divided if necessary.

This daily dose will keep your pets free from infection and help to boost their immunity towards disease. You may also drizzle some liquid allicin in between their shoulder blades 2-3 times a week and this will reduce flea infestation significantly. You will notice a reduction in droppings in their bedding after a few weeks.

Allicin cream and liquid are also very efficient at wound healing and can be applied directly to any minor wounds cuts or abrasions. This leads to very fast and clean wound-healing which will be infection-free.

Cats seem to respond very well to a regular treatment with allicin and we have some good reports of several quite serious conditions greatly alleviated by this natural approach. More work needs to be done but we shall certainly see a range of allicin formulations in the future specifically designed for all our pets, including pigeons (allicin is great for carrier pigeons as it strengthens their immunity and seems to give them more energy) and tropical fish!

POULTRY

Ancient myth says that garlic wards off blood-sucking vampires but initial trial results suggest that this humble spice can also ward off red mites in layers and offer quick and efficient minor wound-healing and help poultry produce more and bigger eggs.

Most experienced poultry-keepers know that garlic is good for hens and has been used raw for thousands of years to help treat infections in birds who develop the sneezes (Practical Poultry February 2007). Many old wives tales have grown up surrounding the over-use of, for example, garlic powder – many fearing that whilst it may help the hens to lay bigger eggs, these will surely smell of garlic!

The key poultry product is called Nopex BK[®], comprising liquid allicin which can be added in small quantities to the drinking water of poultry flocks. Provided it is dosed on a regular basis the birds begin to absorb plenty of the compound and a number of benefits can soon be seen. Birds are generally healthier, free from infections and initial trials have shown improvements in egg size and quality.

These first commercial trials in poultry compared two barns each containing 10,000 birds. One group was given their usual water requirement and the other also given a small daily dose of liquid stabilised Allicin (Nopex BK[®]). The results revealed that treated birds were free of *E. coli* infection while control birds showed signs of infection in liver samples and in their eggs. But a more noticeable benefit became apparent only days after starting the trial. Treated birds appeared healthier and had redder combs. Control birds had white combs, a typical symptom of red mite attack due to anaemia. The result was that the treated birds had a 2% higher egg production!

The improved performance was not surprising as high levels of mite infestation can cause increased stress to the birds, reduced egg

production, anaemia and in severe cases, death. The product represented a simple, safe and natural treatment for the birds (elevated levels of *E. coli* had also been implicated in infections).

A survey in 2003 indicated that 92.5% of the flocks contacted (commercial laying hens, parent stock and fancy fowl in England, Wales and Northern Ireland) had experience of red mite infestations. Red mite (*Dermanyssus gallinae*) is a blood-feeding parasite of birds that attacks resting hens, mainly during the night, for a short (1-2 hour) blood meal. After feeding, the mites hide in cracks and crevices away from daylight (like vampires!)

A follow-up nine-month trial using this stabilised allicin extract compared two further groups of 10,000 hens. Detailed examination of birds in this trial revealed that mites at the nymph stage were being repelled by the taste of allicin in the blood of treated birds. The result was that the nymphs did not feed, dropped off and eventually died. This breaks the cycle with fewer nymphs reaching the adult stage. Birds have more vitality and improved comb colour. Again birds were laying 2-4% more eggs.

Producers sometimes question whether the taste of stabilised allicin might put their birds off drinking. At a rate of just 30 ml per 10 litres of drinking water, however, there are no problems with water intakes. Laboratory tests also confirm no traces of allicin in eggs or meat. In view of the benefits to their general well-being, it seems sensible to treat birds throughout the laying cycle, perhaps resting every fourth day.

Another concentrated formulation of Nopex BK® has also provided poultry-keepers with a simple, non-chemical treatment for minor wounds cuts and abrasions. This is a common problem in small poultry flocks and can often lead to the death of birds since there are

not many treatment choices that actually work. However a simple, regular application of this stabilised allicin compound appears to offer fast wound-healing and further studies on this are currently underway across Europe.

PIGS

The pig weaning period is frequently associated with infectious disease, mainly caused by enterotoxigenic *Escherichia coli*. Plant extracts exert different beneficial effects and may represent antibiotic alternatives to reduce piglet infection. Several compounds were considered but of most interest here was the antioxidant allicin. The results showed that allicin protected the cells against the increased membrane permeability caused by *E. coli*. Allicin protection was not due to its anti-bacterial activity since organism growth was unaffected by the presence of allicin.

A further report from the veterinary trials in Denmark (world famous for its bacon) on an observation in pigs over 4 weeks:

It is not a real trial, but observations over a period of 4 weeks. For comparison the groups are put in before and after used for control. The pigs are controlled 4 times during the period, 6th, 11th, 18th and 22nd May. Data on sickness, treatments and mortality has been collected from 9th to 23rd May.

	Treatment	Control
Group Number of pigs	350	579
Joint inflammation	11 (3%)	10 (2%)
Tail bites	15 (4%)	126 (22%)
Diarrhoea	0	8 (1%)
Not doing fine	1 (0,3%)	3 (0,5%)
Dead	2 (0,6%)	13 (2,2%)

Besides 2 cases of brain inflammation in the control group, there was a serious outbreak of tail bites in the control group which can hardly have anything to do with the product. On the other hand, fewer pigs are dead in the treatment group. Treatment for diarrhoea and joint inflammation are close between the two groups and no significant differences are seen.

HORSES

Mud fever has many names including cracked heels, scratches, rain rot, greasy heel, mud rash and dew poisoning. It is a common condition, usually affecting horses' lower limbs, especially the back legs, and particularly if they are white.

Mud fever is characterised by inflammation of the skin and the appearance of crusty scabs formed from oozing serum. This is caused by the invasion of a bacterium called *Dermatophilus congolensis*, which penetrates the skin following either damage or softening through exposure to the wet or mud. The bacterium thrives in wet, muddy conditions and our increasingly mild and wet winters are escalating the prevalence of this troublesome condition. When the same condition occurs on the upper body, it is also referred to as rain rot or rain scald.

Preventing mud fever in the first place is certainly preferable for your horse, yet at times can be extremely difficult. Some horses will always be more susceptible than others, and wet, muddy fields naturally exacerbate the problem. If your horse is susceptible to mud fever, you should protect its legs from the wet and mud as much as possible and apply an allicin barrier. You should also check the legs regularly and at first signs of soreness, weeping or scabs, treat immediately with an effective mud fever spray of stabilised allicin liquid to prevent the condition worsening and to help clear the problem.

Mud fever can be very persistent and difficult to treat. There are several important stages to successfully treating the condition:

- The skin must be protected from further contact with the wet or mud while the condition is being treated.
- All the scabs must be removed so the treatment can reach the skin.
- The infection must then be treated with a product that attacks the bacteria, such as stabilised allicin.
- Oral supplementation with standardised allicin powder at a rate of 6 g per day is recommended.
- Once the bacteria has been destroyed, the affected area must continue to be protected whilst new skin and hair grows.

Testimonial

‘Further to my telephone call this week, I am writing to update you on the effects of your allicin powder on my horses. I have a homebred half Arab who is now 15 years. Three winters ago he began to cough when stabled in the winter but also in summer when the tracks get dusty – so badly that some days I could not trot when riding.

‘The vet suggested wet hay in winter and then he was on Ventipulmin but would still suffer at least one attack of coughing every ride after exertion such as trotting up a hill or a short canter. At this time he was already on garlic flakes in his daily feeds year round. I discovered your allicin powder product at Westpoint last November and he has been on it daily ever since. We have now reached the stage where we may go for a two-hour fast ride and it is rare for him to cough at all, but if he does it is one or two instead of having to stop for twenty or more. I can’t believe the difference. I also noticed that on his return from a ride he used to have a very liquid white discharge running from one nostril only, but I never see this at all now.

'I also have a livery pony which had a lifelong problem with mud fever, which would begin at the beginning of September every year with no explanation, i.e. she is not in mud or long wet grass. We were feeding her "Mud fever" supplements and tried greasing and drying her legs, all to no avail. One year she was so bad we could not touch her legs at all and had to sedate her heavily to remove all the scabs. Having read about the allicin powder and seen its success with the coughing horse, we introduced it into her diet in July. I am happy to report that to date she has no mud fever on her legs at all and having spoken to her previous owners this is apparently the first time in her life she has been free of it and she is 15!

My only problem is maintaining a supply of it because no tack shop in Cornwall seems to stock it and I have been to every one in my area. This means I have to send for it mail order which is fine for me but means other people are missing out on a product which actually does what it claims! If you would like any further info about my experiences with the product, please let me know.' - Mrs M Collings

MONKEYS

'You have kindly been in contact with Alan Knight regarding our 6 baby Bonnet Macaques with which we had a great deal of trouble as they all had Entamoeba histolytica, causing them to be quite ill.'

Medical note

Entamoeba histolytica (see also parasite section in human health) is an anaerobic parasitic eukaryote protozoan, part of the genus *Entamoeba*. It infects predominantly humans and other primates. Diverse mammals such as dogs and cats can become infected but usually do not shed cysts (the environmental survival form of the organism) with their faeces, thus do not contribute significantly to transmission. The active (trophozoite) stage exists only in the host and in fresh faeces; cysts survive outside the host in water and soils and on

foods, especially under moist conditions on the latter. When swallowed they cause infections by ex-cysting (to the trophozoite stage) in the digestive tract.

Entamoeba histolytica, as its name suggests, can actually bore through the enteric walls (histolysis = destroying tissue) and reach the bloodstream. From there, it can reach different vital organs of the human and primate like the liver, lungs, brain, eyes, etc. A typical effect is a liver abscess caused by such migrating *Entamoeba histolytica*, which can be fatal. Ingested red blood cells are sometimes seen in the cytoplasm.

Entamoeba histolytica infection can lead to amoebiasis or amoebic dysentery. Symptoms include fulminating dysentery, diarrhoea, weight loss, fatigue, abdominal pain, and amoebomas. It can be diagnosed by stool samples. Trophozoites should be seen in a fresh faecal smear and cysts in an ordinary stool sample. ELISA or RIA can also be used.

‘We tried everything we could to get them to take Flagyl [a pharmaceutical antibiotic] but no matter what we did it was rejected. In desperation we tried some treatment that one of the researchers had taken personally for a very serious bacterial infection that was antibiotic-resistant. Stabilised allicin powder was given to the monkeys in the hope that it would be able to kill this serious infection.

‘The monkeys ranged between 3 and 5 months in age. We used 1 capsule a day (450 mg) between the six of them for 21 days and in this time they went from having diarrhoea simply running out of them, which was a very serious condition, to having normal droppings. We had no problems at all getting them to take the powdered allicin in fruit where as no matter how we tried to disguise the drugs they would not even put the treated fruit to their mouths.

With the drugs we tried everything to get them to take it, we made home made sweets with fruit juice and lots of sugar, we tried cakes and just about everything one could dream of – all to no avail. We tried catching them and syringing it into their mouths with fruit juice and the stress of this was enough to kill them and it made them try to be physically sick.

‘Anyway we found we had no problem whatsoever getting the monkeys to take powdered allicin in fruit, and in just 10 days the infection had cleared although we kept them on it for 21 days for safety. There has been no re-occurrence and they are now all very fit and healthy.’ - Case history provided by the Founder of International Animal Research, Mr John Hicks.



The Future

In the last three decades we have seen several viral and bacterial epidemics take place at a time when we would have expected the eradication of many infectious diseases. Some people say this is due to the over-use of too-potent antibiotics, which eliminate protective infecting agents. Others believe it might be the widespread use of vaccines. There are even conspiracy theorists who believe they may be the results of terrorist acts or leakage of viral mutants from research laboratories.

Whatever the cause, globalisation and the increasing availability of long distance flights is making the global spread of infections far easier. In the 21st Century we have already identified a number of infectious organisms that can and will present a major problem to patients, physicians, health care workers and administrators the world over. These include:

MRSA

MDR Tuberculosis

VRE Vancomycin-resistant *enterococcus*

VRSA Vancomycin-resistant *Staphylococcus aureus*

VISA and GISA (Glycopeptide intermediate resistant *Staphylococcus aureus*)

All these have proven to be sensitive to allicin and a sixth – PRSP Penicillin-resistant *Streptococcus pneumonia* - though not yet tested, is very likely to be.

With MRSA now reported in the 'healthy community' (cMRSA community-acquired methicillin-resistant *staphylococcus aureus*) the writing is already on the wall. We need something that can take on the superbugs. We need to reduce our dependence on pharmaceutical

antibiotics, or at least make them more effective, by reducing the extent to which they are used. By not doing that, these powerful microbes will take over. Already infectious disease is a bigger killer than heart disease or cancer. The species above cannot be treated by anything the pharmaceutical industry has to offer. Even the latest antibiotics, yet to reach the market, are unable to kill certain species of bacteria. We have seen international panic over SARS, Bird Flu, *Clostridium difficile* and MRSA spreading. Bad enough and quite worrying when you realise doctors routinely encounter organisms such as E. coli, Helicobacter pylori, Tuberculosis, Herpes virus, Acinetobacter, Cryptosporidium, Campylobacter, Salmonella, Cholera, Streptococcus Pyogenes flesh-eating bacteria and others that are becoming multi-drug-resistant. It is estimated the number of bacteria, virus and fungal pathogens to be found either in or around every human being is so large as to be virtually infinite. This is why still, after 70 years of producing pharmaceutical antibiotics, recent surveys indicate that 90 percent of visits to doctor's surgeries are infection-related. It is also why more than one million metric tons of antibiotics have been dispersed into the biosphere in the past 50 years – half for human use and half for animal use which means that the indigenous bacteria of all living species are richly populated with resistant bacteria we cannot get rid of. Is it any wonder that public health physicians are so worried?

Why are we losing the battle?

Recent reports indicate that bacteria may send messages to each other about resisting antibiotic poisoning (Medicine Today, June 2002). In fact, bacterial signalling is going on all the time, all over your body, but especially in your mouth and guts. Finding ways of interfering with this signalling process is the latest objective of researchers who are waging the antibiotic arms race. Major results of these bacterial conversations are bacterial communities! Among the more extraordinary sights visible through the latest confocal laser scanning

microscopes, which allows objects to be viewed almost in 3D, are what have been dubbed 'slime cities' – armoured defensive communities where bacteria live and reproduce, safe from antibiotics, your immune system and other predators. Known technically as biofilms, they are currently the target of intense research now it is becoming increasingly clear they are at the root of some of our most intractable conditions. The US Centers for Disease Control and Prevention estimate 65 percent of human bacterial infections involve biofilms. Not only are they responsible for tooth decay and gum disease but they also cause many of the problems associated with cystic fibrosis, ear infections and infections of the prostate gland and the heart. They cause an estimated \$6 billion a year of expenditure in the USA by causing hard-to-treat infections around catheters, artificial heart valves and other medical implants.

Similarly, irrational prescribing results in over-use of the very agents used to remove these infectious organisms. It is estimated that every year in the States, 10 million adults seek treatment for acute bronchitis and most are given antibiotics even though the pathogens involved in most cases are viruses, which antibiotics aren't designed to work on. We tend to think of bacteria as primitive single-cell creatures, but when they are organised into a biofilm they differentiate, communicate, cooperate and deploy collective defences against antibiotics. In short, they behave like a multi-cellular organism.

Bacteria from biofilms were among the first ever to be seen through a microscope when pioneer Antony van Leeuwenhoek looked at plaque – a biofilm – scraped from his own teeth in the late 1600's. But it wasn't until the 1970's that scientists began to appreciate just how complex these micro slime cities are. Plaque, for instance, is founded on a base of dense opaque slime about 5 micrometres thick. Above this, vast colonies of bacteria shaped like mushrooms or cones rise to between 100 to 200 micrometres. Enclosed within their highly

effective defensive wall of slime live communities of a variety of bacterial strains. One researcher described them as 'cities' permeated at all levels by a network of channels through which water, bacterial garbage, nutrients, enzymes, metabolites and oxygen travel to and fro. The bacteria inside a biofilm, comprising 15 percent bacterial cells and 85 percent slime, are 1000 times less likely to succumb to antibiotics than bacteria in a free-floating state.

The notion that bacteria can talk to each other was first proposed more than 30 years ago by scientists studying 'glow in the dark' bacteria such as *Vibrio fischeri*, which inhabit 'light organs' of certain squid and marine fish. The bacteria don't glow as individuals swimming freely but when enough of them form a group, their illuminations are switched on. So they must have some way of letting each other know when enough of them have gathered. It wasn't until the 1980's that researchers identified the chemical they each put out – AHL (acyl-homoserine lactone). The more of them in one place, the higher the level of AHL released. Above a certain threshold the concentration of AHL triggers the luminescence in a mechanism usually referred to as Quorum Sensing.

Gradually a better understanding of how biofilms fight off antibiotics is emerging. The bacteria benefit from pooling their effects. For instance, in a biofilm some bacteria produce an enzyme that inactivates the antiseptic hydrogen peroxide, but a single bacterium can't make enough to save itself. Another factor is that even if an antibiotic does get through and kills off some bacterial inhabitants, a substantial number are likely to survive. This is because bacteria exist in a spectrum of physiological states from rapidly growing to dormant. Antibiotics usually target some activity such as cell division, and that means the dormant ones will usually live to fight another day. Dr Richard Novick found that *Staphylococcus aureus* can be divided into four types, each with slightly different signalling molecules. The

molecules used by one type stimulate activity in its own group but inhibit it in the others – an example of the way bacteria compete with each other. This particular bacterium is a worry to every healthcare establishment in the western world. It has developed a number of strains resistant to all pharmaceutical antibiotics, even Vancomycin, a toxic parenteral drug usually reserved as a last resort.

Bacteria are sufficiently well organised to find ways of avoiding the immune system. For instance, in *Vibrio cholerae*, the bacterium that causes cholera, the same genes involved in regulating quorum sensing also turn on the toxin production (Proc Nat'l Acad Sci, 5 March 2002). The value of this strategy is that a few toxic bacteria might alert the immune system and be rapidly engulfed. By waiting to turn on toxicity until there are enough of them, they have a better chance of overwhelming the host's defences. It has been estimated that 40 percent of proteins in bacterial walls differ in 'slime city dwellers' from those that are 'free ranging'. The implication is that some of the proteins identified in cultures and targeted by antibiotics simply aren't there in city dwellers. Most of the work on quorum sensing has concentrated on chemicals which allow members of the same species to talk to one another. However, while Dr Bonnie Bassler at Princeton University was working on the luminous bacteria that led to the finding of quorum sensing, she made the remarkable discovery that signals from other bacteria could also turn on their lights. It seems that bacteria have some sort of Esperanto – a common language (Nature, 31 January 2002) – which involves a protein known as A1-2. Exactly what this system is used for isn't clear yet. However, among the bacteria that infect humans, those found to produce A1-2 include *Escherichia coli* (food poisoning), *Haemophilus influenzae* (pneumonia and meningitis), *Helicobacter pylori* (peptic ulcers), *Yersinia pestis* (bubonic plague) and *Staphylococcus aureus* (pneumonia, meningitis and toxic shock syndrome).

ALL of these bacteria can be killed by low concentrations of allicin

Allicin, mother nature's defender, is an agent that can break up a biofilm, destroy a wide range of bacterial species, wipe out fungal infections, boost an under-active immune system, reduce cholesterol and blood pressure levels, prevent viral infections, kill off parasites, remove protozoal organisms, vasodilate when necessary, prevent the release of histamine, and even prevent mosquitoes from attacking. All this from an agent that can be produced from fresh garlic!

Work is currently underway, using the latest technology, to allow us to blast apart a bacterial cell and detect exactly which proteins and enzymes it can produce. Then the same species is treated with allicin liquid or powder, blasted apart again and analysed to see which proteins and enzymes have been disabled and are unable to infect.

We already know that allicin is capable of penetrating bacterial cell walls and preventing the release of many enzymes that are toxic to humans. Allicin formulations are also effective against a wide spectrum of bacterial species, viral infections, fungal and protozoal disease as well as a large number of parasite problems.

Conclusion

In this book you have read how allicin, 'Nature's Antibiotic', can kill TB, smallpox, MRSA, *Streptococcus* species and many more troubling micro-organisms, with the additional benefit of strengthening the immune system to prevent further attack and yet not disrupting or destroying the existing healthy bacteria. There's a great deal going on in terms of research and clinical trials. Barely do I finish a draft of this book when I immediately have to revise it as many studies on allicin, added to a wide range of other active raw ingredients, are underway. Aside from this crucial requirement for a

natural antibiotic/antifungal/antiviral, allicin therapy is now being evaluated for the prevention and treatment of the world's two biggest killer diseases: cancer and coronary heart disease. In those nations where garlic consumption, both cooked and raw, is a strong part of daily life, much lower coronary death rates and significant protection from cancer are evident. Obviously, there are many other factors involved but this book, for the first time, considers the broader picture of medically approved studies and confirms what great physicians, herbalists and healers have suggested for thousands of years. Namely, that something garlic produces is good for human health. Now at long last, after 80 years of trying to release the 'mother substance' – the POWER of garlic – allicin is finally available in sufficient quantities to act as an effective, natural antibiotic in your body.

THE END

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Reed E. Burns., Gerald W. Hayes Jr., Jose D. Diaz and Thomas B. Dowda III Division of Plant Industry, Florida Department of Agriculture and Consumer Services Gainesville, Florida

Appendix

Table 1

Bacterial infections against which Allisure® powder, gel, or liquid may be effective (all with very low concentrations required to prevent infection). This wide range of sensitive bacterial species shows just how allicin can help to revolutionize the treatment of infectious disease.

- *Acinetobacter baumannii*
- *Acinetobacter calcoaceticus*
- *Escherichia coli*
- *Bacillus cereus*
- *Bacillus subtilis*
- *Campylobacter jejuni*
- *Campylobacter fetus*
- *Campylobacter coli*
- *Campylobacter doylei*
- *Campylobacter hyointestinalis*
- *Campylobacter ureolyticus*
- *Campylobacter mucosalis*
- *Campylobacter helveticus*
- *Clostridium difficile*
- *Citrobacter* spp.
- *Hafnia* spp
- *Providencia* spp.
- *Micrococcus*
- *Mycobacterium tuberculosis*
- *Mycobacterium leprae*
- *Mycobacterium bovis*
- *Mycobacterium kansasii*
- *Helicobacter pylori*
- *Cornyebacterium* spp.

- Pasteurella spp.
- Cryptococcus spp.
- Salmonella typhimurium
- Salmonella dublinii
- Salmonella enteritidis
- Shigella
- Bacillus anthracis
- MRSA (Methicillin resistant staphylococcus aureus)
- GISA (Glycopeptide intermediate resistant staphylococcus aureus)
- VISA (Vancomycin intermediate resistant staphylococcus aureus)
- Staphylococcus aureus in skin disease
- Streptococcus pyogenes (flesh eating bacteria)
- Klebsiella aerogenes
- Saccharomyces cerevisiae *Meningitis
- Cholera
- Listeria monocytogenes
- Enterococcus faecium
- Pseudomonas aeruginosa
- Proteus mirabilis
- Nesseria Gonorrhoea
- Clostridium perfringens
- Chlamydia
- Haemophilus Influenza
- Enterococcus histolytica

*(Direct observation reported in scientific literature
or personal communication to the author)*

Table 2

Fungal and dermatophyte infections against which Allisure® allicin powder, gel, cream or liquid may be effective.

- Athlete's foot

- *Candida albicans*
- *Aspergillus fumigatus*
- *Aspergillus niger*
- *Rhizopus nigricans*
- *Mucor racemosus*
- *Didium lactus*
- *Coccidioides immitis* (Valley Fever)
- *Torilopsum* spp.
- *Rhodotorula* spp.
- *Trichosporon* spp.
- *Auxarthron zuffianum*
- *Uncinocarpus resii*
- *Fusarium laceratum*
- *Geotrichum candidum*
- *Trichoderma hamatum*
- *Trichophyton cerebriforme*
- *Trichophyton granulosum*
- *Trichophyton terrestre*
- *Malbranchea pulchella*
- *Chrysosporium tropicum*
- *Microsporum canis*
- *Aspergillus parasiticus*
- *Aspergillus ochraceus*
- *Penicillium* spp.
- *Microsporum gypseum*
- *Saccharomyces* spp.
- *Kloeckera apiculata*
- *Oospora lactis*
- *Penicillium notatum*
- *Cryptococcus neoformans*
- *Microsporum canis*
- *Epidermaphyton mentagrophytes*
- *Aspergillus flavus*

- *Parracoccoides brasiliensis*
- Ringworm
- *Histoplasma capsulatum*

*(Direct observation reported in scientific literature
or personal communication to the author)*

Table 3

Parasitic disease against which Allisure® allicin powder, liquid gel or cream may be useful.

- Amoebic dysentery
- *Cryptosporidium*
- Giardiasis
- Toxoplasmosis
- Leishmaniasis
- Malaria
- Oxyuriasis (pin worm infestation)
- Hookworm
- Tapeworms
- *Echinococcus*
- *Trichomonas*
- Round worm (*Ascaris strongyloides*)
- Shistomiasis
- Filariasis Intestinal flukes
- Liver flukes
- Lung flukes
- Head lice
- Lyme Disease

*(Direct observation reported in scientific literature
or personal communication to the author)*

Table 4

Viral infections against which Allisure® allicin powder, liquid and cream may be effective.

- Influenza A
- Common Rhinovirus (Cold infection)
- Influenza B
- Coxiella burnetii (Q-Fever)
- Pneumonia
- Severe acute Respiratory Syndrome (SARS)
- Cytomegalovirus
- Pox virus
- Parvovirus
- Herpes Simplex Type 1 & 2 (Cold Sores)
- Herpes Zoster (Shingles)
- Warts
- Flu
- Croup
- Chicken Pox
- Vaccinia virus
- Variola virus
- Vesicular Stomatitis virus

*(Direct observation reported in scientific literature
or personal communication to the author)*

Table 5

Other diseases against which Allisure® allicin powder, liquid or cream may be useful.

- Takayasu's disease
- Elevated blood pressure
- Elevated cholesterol

- Raynaud's disease
- Rocky Mountain Spotted Fever
- Multiple Sclerosis
- Chronic fatigue syndrome
- Fibromyalgia
- Labyrinthitis
- Giardiasis
- Pneumonia
- Genital herpes

*(Direct observation reported in scientific literature
or personal communication to the author)*

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BATTLE

East Sussex TN33 9BR

United Kingdom

For more information on garlic and allicin:

The Garlic Centre

PO Box 29,

Battle,

East Sussex TN33 9BR

United Kingdom

Email: garlic@mistral.co.uk

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