

ALLISURE®

Summary of Product Characteristics

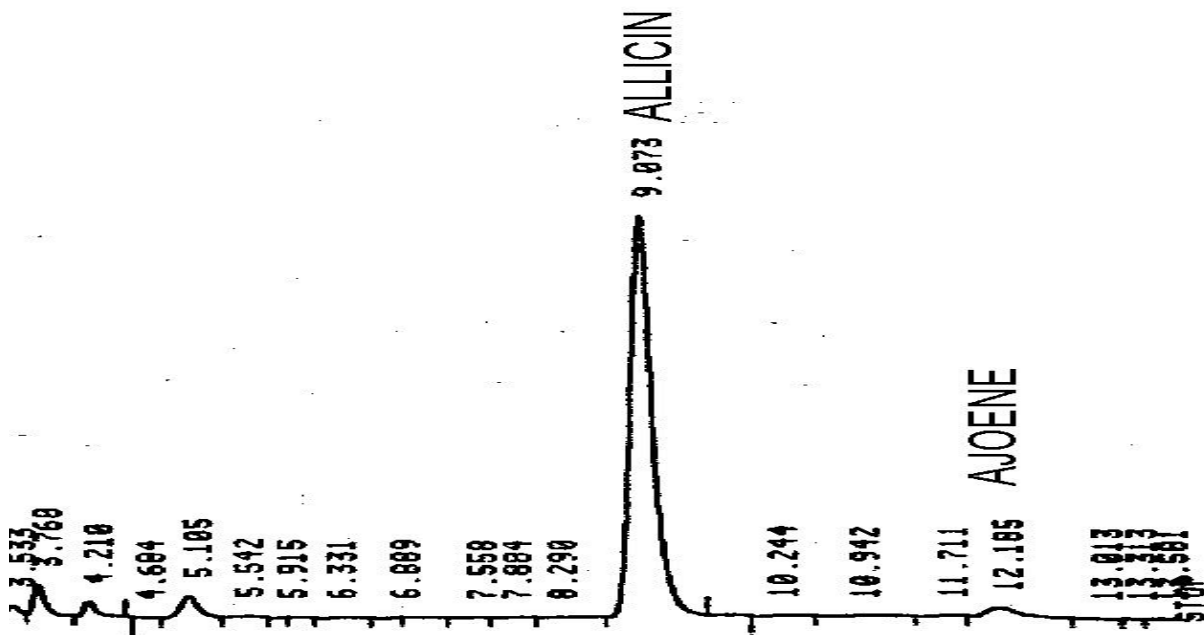
1. NAME OF THE ACTIVE MATERIAL

Allisure is Allicin powder with a 100% allicin yield

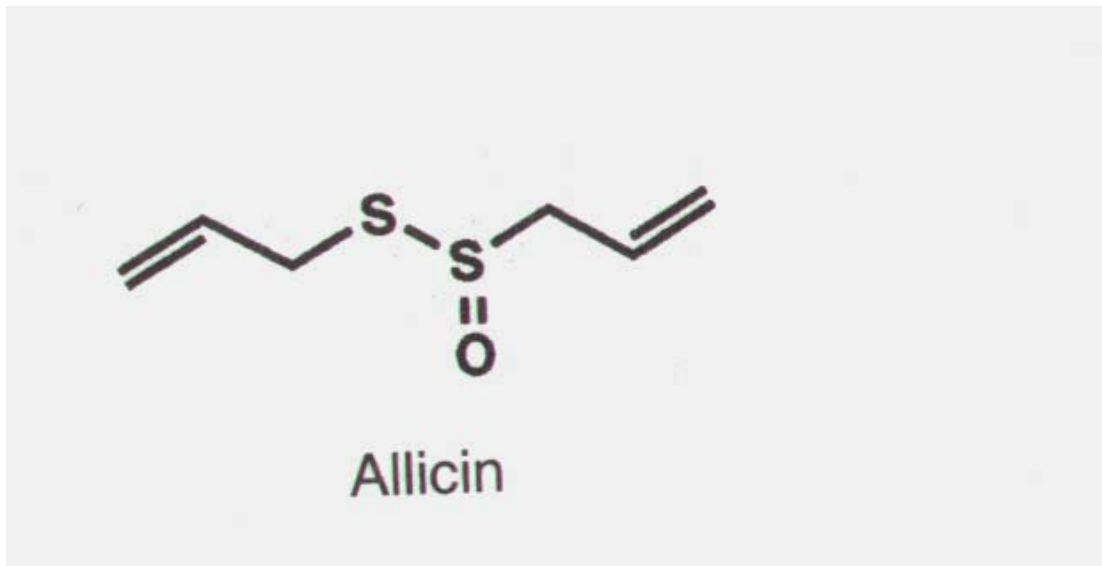
2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Capsules contain Allisure as the active agent which is made up from Non-genetically modified maltodextrin, allicin and gum acacia.

2a. HPLC determination of active component allicin in Allisure powder



3. CHEMICAL STRUCTURE



The sulphur - sulphur and sulphur - oxygen bonds are responsible for many of the beneficial properties associated with allicin. Although similar to the penicillin structure these bonds are very reactive and in fresh garlic they break down very quickly into a series of thiosulphinates components.

4. MANUFACTURING PROCESS

Allsure powder TM is the result of a patented process, which produces purified allicin liquid. It is the first health food supplement to provide a 100% allicin yield, the key active ingredient of fresh garlic.

Allisure is made from fresh, raw garlic. Heads of garlic are specifically selected to ensure that they contain a significant enzyme activity (allinase enzyme). Garlic heads are split into cloves, which are left unpeeled and then subjected to filtration, controlled temperature and pressure extraction and a flood reaction process designed to produce stabilized liquid allicin dissolved in water. No chemical solvents are used. The alliin amino acid in fresh garlic is subjected to complete conversion by the allinase enzyme and to ensure a large volume of active agent is harvested. The volume of active agent produced is directly related to the enzymatic concentration and activity.

5. CLINICAL PARTICULARS

ALLISURE® has demonstrated significant antibacterial, antifungal, larvicidal and antiviral properties. The material has also shown an ability to reduce cholesterol and blood pressure as well as increasing CD4 T cell count significantly.

5.1 Antibacterial, antifungal, antiviral and larvicidal properties

Alliin, one of the active principles of freshly crushed garlic homogenates, has a variety of antimicrobial activities. Alliin in its pure form was found to exhibit i) antibacterial activity against a wide range of Gram-negative and Gram-positive bacteria, including multidrug-resistant enterotoxigenic strains of *Escherichia coli* ii) antifungal activity, particularly against *Candida albicans* iii) antiparasitic activity, including some major human intestinal protozoan parasites such as *Entamoeba histolytica* and *Giardia lamblia* and iv) antiviral activity. The main antimicrobial effect of alliin is due to its 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*.

1. Introduction

Garlic is one of the edible plants, which has generated a lot of interest throughout human history as a medicinal panacea. Wide ranges of microorganisms including bacteria, fungi, protozoa and viruses have been shown to be sensitive to crushed garlic preparations. Moreover, garlic has been reported to reduce blood lipids and to have anticancer effects. Chemical analyses of garlic cloves have revealed an unusual concentration of sulfur-containing compounds (1—3%) [1, 2].

Analysis of steam distillations of crushed garlic cloves performed over a century ago showed a variety of allyl sulfides. However, it was not until 1944 that Cavallito and his colleague's [3] isolated and identified the component responsible for the remarkable antibacterial activity of crushed garlic cloves. The compound turned out to be an oxygenated sulfur compound, which they termed alliin, from the Latin name of the garlic plant, *Allium sativum*. Pure alliin is a volatile molecule that is poorly miscible in aqueous solutions and which has the typical odor of freshly crushed garlic [4]. Final proof of the chemical structure of alliin (figure 1) came in 1947, when it was shown that alliin could be synthesized by mild oxidation of diallyl disulfide [2]. The debate on the presence of alliin in crushed cloves versus its absence in odorless intact cloves was resolved after Stoll and Seebeck [5] isolated, identified, and synthesized an oxygenated sulfur amino acid that is present in large quantities in garlic cloves and which they named alliin (*figure 1*). Alliin was found to be the stable precursor that is converted to alliin by the action of an enzyme termed allinase, which is also present in the cloves [6]. Only one isomer of alliin ((+)-S-allyl-L-cysteine-sulfoxide) was found to be present, which in itself had no antimicrobial activity. Numerous investigators studied the amounts of alliin and alliin present in different strains of garlic. Considerable variations have been reported, ranging from 2.8 to 7.7 mg/gram found in Romanian red [2].

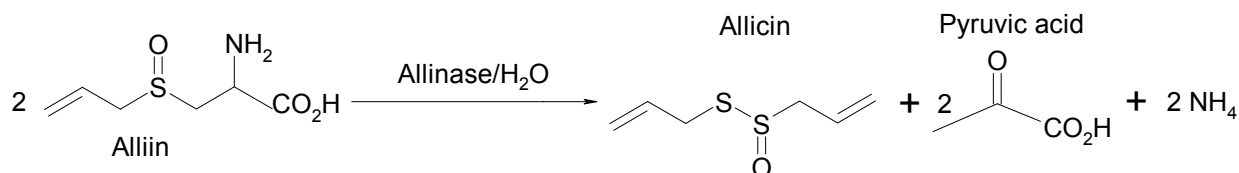


Figure 1. Generation of alliin from crushing a garlic clove.

The transformation of alliin into the biologically active allicin molecule upon crushing of a garlic clove is extremely rapid, being complete in seconds. The enzyme responsible for the lysis is alliinase, or alliin-lyase (E.C.4.4.1.4), a pyridoxal 3-phosphate-dependent glycoprotein consisting of two subunits 17, 81. Alliinase is present in unusually high amounts in garlic cloves: at least 10% of the total protein content (10 mg/g fresh weight).

The gene coding for the enzyme has been cloned, and upon translation, found to consist of 448 amino acids with a protein molecular mass of 51.45 kDa and together with a carbohydrate content of 5.5-6%, gives 55000 kDa [7, 8]. Alliinase has 10 cysteine residues, all of them in S-S bridges, and their reduction, or the removal of the pyridoxal coenzyme factor, renders the enzyme inactive. Expression of a recombinant alliinase has been achieved in the baculovirus system, and although protein yields were impressive, the enzymatic activity was very poor due to difficulties with folding of the protein (Mirelman *et al.*, unpublished results). Moreover, in the clove, alliinase is found closely associated with a lectin [9]. The site of linkage of the carbohydrate moieties of alliinase has been identified at Asp 146 [9]. Significant homology has been reported between the garlic and onion alliinases, although alliin was not detected in the latter species.

Garlic cloves are odour-free until crushed. Cross-section studies have indicated that the substrate alliin and the enzyme alliinase are located in different compartments [2, 6]. This unique organization suggests that it is designed as a potential defense mechanism against microbial pathogens of the soil. Invasion of the cloves by fungi and other soil pathogens begins by destroying the membrane, which encloses the compartments that contain the enzyme and the substrate. This causes the interaction between alliin and alliinase that rapidly produces allicin and which in turn inactivates the invader. The reactive allicin molecules produced have a very short half-life, as they react with many of the surrounding proteins, including the alliinase enzyme, and making it into a quasi-suicidal enzyme. This very efficient organization ensures that the clove defense mechanism is only activated in a very small location and for a short period of time, whereas the rest of the alliin and alliinase remain preserved in their respective compartments and are available for interaction in case of subsequent microbial attacks. Moreover, since massive generation of allicin could also be toxic for the plant tissues and enzymes, its very limited production and short-lived reactivity, which is confined to the area where the microbial attack takes place, minimizes any potential self-damage to the plant.

2. Antibacterial activity of allicin

The antibacterial properties of crushed garlic have been known for a long time. (see table 1). Various garlic preparations have been shown to exhibit a wide spectrum of antibacterial activity against Gram-negative and Gram-positive bacteria including species of *Escherichia*, *Salmonella*, *Staphylococcus*, *Streptococcus*, *Klebsiella*, *Proteus*, *Bacillus*, and *Clostridium*. Even acid-fast bacteria such as *Mycobacterium tuberculosis* are sensitive to garlic [10]. Garlic extracts are also effective against *Helicobacter pylori*, the cause of gastric ulcers [11]. Garlic extracts can also prevent the formation of *Staphylococcus* enterotoxins A, B, and C1 and also thermonuclease [12]. On the other hand, it seems that garlic is not effective against toxin formation of *Clostridium botulinum* [13].

Cavallito and Bailey [4] were the first to demonstrate that the antibacterial action of garlic is mainly due to allicin [3]. The sensitivity of various bacterial and clinical isolates to pure preparations of allicin [14] is very significant. As shown in table I (Mirelman *et al.*, unpublished results) the antibacterial effect of allicin is of a broad spectrum. In most cases the 50% lethal dose concentrations were somewhat higher than those required for some of the newer antibiotics. Interestingly, various bacterial strains resistant to antibiotics such as methicillin resistant *Staphylococcus aureus* as well as other multidrug-resistant enterotoxigenic strains of *Escherichia coli*, *Enterococcus*, *Shigella dysenteriae*, *S. flexneri*, and *S. sonnei* cells were all found to be sensitive to allicin. Allicin also had an in vivo antibacterial activity against *S. flexneri* Y when tested in the rabbit model of experimental shigellosis [15].

On the other hand, other bacterial strains such as the mucoid strains of *Pseudomonas aeruginosa*, *Streptococcus β hemolyticus* and *Enterococcus faecium* were found to be resistant to the action of allicin. The reasons for this resistance are unclear. It is assumed that hydrophilic capsular or mucoid layers prevent the penetration of the allicin into the bacteria, but this has to be studied more in depth.

Table 1. Sensitivity of various bacterial species to allicin.

Bacterial Strain	Allicin Concentration (LD ₅₀ µg/ml)	Comments
<i>Escherichia coli</i>	15	Sensitive to antibiotics
<i>Escherichia coli</i>	15	Multidrug resistant MDR
<i>Staphylococcus aureus</i>	12	Sensitive
<i>Staphylococcus aureus</i>	12	Methicillin resistant
<i>Streptococcus progenies</i>	3	Sensitive
<i>Streptococcus β hemolyticus</i>	>100	Clinical MDR strain
<i>Proteus marbles</i>	15	Sensitive
<i>Proteus mirabilis</i>	>30	Clinical MDR strain
<i>Pseudomonas aeruginosa</i>	15	Sensitive to cefprozil
<i>Pseudomonas aeruginosa</i>	>100	MDR mucoid strain
<i>Acinetobacter baumannii</i>	15	Clinical isolate
<i>Klebsiella pneumoniae</i>	8	Clinical isolate
<i>Enterococcus faecium</i>	>100	Clinical MDR strain

3. Antifungal activity of allicin

Garlic extracts also have a strong antifungal effect and inhibit the formation of mycotoxins like the aflatoxin of *Aspergillus parasiticus* [17]. Allicin was assumed to be the main component responsible for the inhibition of fungal growth. A concentrated garlic extract containing 34% allicin, 44% total thiosulfinates, and 20% vinylidithiins possessed potent in vitro fungistatic and fungicidal activity against three different isolates of *Cryptococcus neoformans*. The minimum inhibitory concentration of the concentrated garlic extract against 1×10^5 organisms of *C. neoformans* ranged from 6 to 12 µg/mL. In addition, in vitro synergistic fungistatic activity with amphotericin B was demonstrated against all isolates of *C. neoformans* [18]. Pure allicin was found to have a high anticandidal activity with a minimum inhibitory concentration of 7 µg/mL [19]. Yamada and Azuma [20] report that pure allicin was effective in vitro against species of *Candida*, *Cryptococcus*, *Trichophyton*, *Epidermphyton*, and *Microsporium* at low concentration (minimal inhibitory concentrations of allicin was between 1.57 and 6.25 µg/mL). Allicin inhibits both germination of spores and growth of hyphae [20]. The sensitivities of various clinically important yeasts to a pure preparation of allicin were determined and found to be very significant (table II) (Mirelman *et al.*, unpublished results). The mode of action of allicin on the fungal cell has not yet been elucidated but it is assumed to function on thiol enzymes as in other microorganisms (see below).

4. Antiparasitic properties of allicin

The antiparasitic effects of freshly crushed garlic were known by many ancient cultures. Albert Schweizer used to treat people suffering from dysentery or intestinal worms with freshly crushed garlic. One of the traditional Chinese medical treatments for intestinal diseases is an alcoholic extract of crushed garlic cloves. Several years ago we found out that *Entamoeba histolytica*, the human intestinal protozoan parasite, is very sensitive to allicin, as only 30 µg/mL of allicin totally inhibits the growth of amoeba cultures [21]. More recently we have found that at lower concentrations (5 µg/mL), allicin inhibited by 90% the virulence of trophozoites of *E. histolytica* as determined by their inability to destroy monolayers of tissue-cultured mammalian cells in vitro [22].

Allicin (30 µg/mL) also very efficiently inhibited the growth of other protozoan parasites such as *Giardia lamblia*, *Leishmania major*, *Leptomonas colosoma*, and *Crithidia fasciculata* (Mirelman *et al*, unpublished results). Some allicin toxicity towards tissue-cultured mammalian cells was observed at concentrations above 100 µM [22]. Interestingly however, at these high allicin concentrations no damage to the mammalian cells was seen if the incubations were done in the presence of amoebic trophozoites, suggesting that the affinity of the allicin molecules is towards the parasite targets. The reason for microbial cells' higher sensitivity to allicin than that of mammalian cells is that most of the microbial cells do not have, or have very small amounts of, glutathione (or its equivalent thiol molecules such as trypanothione) and thus lack the ability to reactivate the essential SH-enzymes that are thiolated by allicin (see below section 6).

Table II Effect of allicin on various fungal pathogens

Fungal strain	Allicin concentration MIC (µg/mL)	Comments
<i>Candida albicans</i>	0.3	
<i>Candida albicans</i>	0.8	Clinical isolates
<i>Candida neoformans</i>	0.3	
<i>Candida parapsilosis</i>	0.15	
<i>Candida tropicalis</i>	0.3	
<i>Candida krusei</i>	0.3	
<i>Torulopsis glabrata</i>	0.3	
<i>Torulopsis glabrata</i>	1.9	Clinical isolates

5. Antiviral activity of allicin

Fresh garlic extracts in which allicin is known to be the main active component have been shown to have *in vitro* and *in vivo* antiviral activity. Among the viruses, which are sensitive to garlic extracts are the human cytomegalovirus, influenza B, herpes simplex virus type 1, herpes simplex virus type 2, parainfluenza virus type 3, vaccinia virus, vesicular stomatitis virus, and human rhinovirus type 2 [23]. The allicin condensation product, ajoene, seems to have in general more antiviral activity than allicin. Ajoene was found to block the integrin-dependent processes in a human immunodeficiency virus-infected cell system [24]. Interestingly, there are some viruses like the garlic plant virus X which are resistant to the antiviral effects of garlic

extracts [25].

Most recently a double blind placebo controlled study has shown significant protection from the common cold virus. Conducted by The Garlic Centre and published in *Advances in Therapy* this is the first serious work to show both prevention, treatment and reduction of re-infection benefits from taking Allisure once daily [16].

6. Mechanism of action of allicin

Inhibition of certain thiol-containing enzymes in the microorganisms by the rapid reaction of thiosulfinates with thiol groups was assumed to be the main mechanism involved in the antibiotic effect [3]. Recently, we have studied the mechanism of action of pure allicin molecules with thiol groups in more detail [14]. This study confirmed the ability of allicin to react with a model thiol compound (L-cysteine) to form the S-thiolation product S-allylmercaptocysteine. 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 [22], 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 µg/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. Interestingly, all three enzymes could be reactivated with thiol-containing compounds such as DTT, mercaptoethanol and glutathione [14]. At concentrations that are at least a log higher (> 100 µg/mL), allicin was also found to be toxic to tissue-cultured mammalian cells [22]. As mentioned above, the significant difference in sensitivity between the microbial and mammalian cells may be explained by the much higher concentrations of glutathione that the mammalian cells possess.

Allicin also specifically inhibits other bacterial enzymes such as the acetyl-CoA-forming system, consisting of acetate kinase and phosphotransacetyl-CoA synthetase [26]. The inhibition is noncovalent and reversible. (¹⁴C) acetate incorporation into fatty acids of isolated plastids was inhibited by allicin with a 50% inhibitory concentration (I₅₀ value) lower than 10 mM. Furthermore, allicin at bacteriostatic concentrations (0.2 to 0.5 mM) was found to partially inhibit, in *Salmonella typhimurium*, the DNA and protein synthesis, but the effect on RNA synthesis was immediate, suggesting that this could be a primary target of allicin action [27]. *E. coli* RNA polymerase, in its alpha-subunit, contains a single sulfhydryl group which was shown to react with the monomeric derivative of fluorescein, a specific reagent for thiol groups (fluorescein monomercuroacetate) [28]. This suggests that RNA polymerase could also be a target for allicin.

The condensation product of allicin, ajoene, which has a similar oxygenated sulfur group, has been shown to inhibit the proliferation of *Trypanosoma cruzi*, possibly by inhibition of phosphatidylcholine biosynthesis [29]. Ajoene was also recently shown to inhibit phosphatidylcholine biosynthesis in the human pathogenic fungus *Paracoccidioides brasiliensis* [30]. The inhibition capacities shown for ajoene clearly suggest that additional microbe-specific enzymes may also be targets for allicin.

It is reasonable to conclude, therefore, that the broad-spectrum antimicrobial effects of allicin (and ajoene) are due to the multiple inhibitory effects they may have on various thiol-dependent enzymatic systems. It is difficult at this stage to state, which are the more lethal targets. It could very well be that the effect of allicin may be at different levels. Some enzymes such as the thiol proteases, which cause severe damage to the host tissues, may be inhibited at the lowest concentrations.

At low concentrations the inhibition of these enzymes may not be lethal, but sufficient to block the microbe's virulence. At slightly higher concentrations other enzymes

such as the dehydrogenases or thioredoxin reductases may be affected, and even partial inhibition of these enzymes could be lethal for the microorganism.

All the above descriptions on the wide range of biological activities that allicin has been found to have should have propelled this molecule into becoming a prime candidate for therapeutic use. Recently it has been possible to patent the manufacture of allicin in commercial grade quantities. This is not the first time that economic considerations will prevent a natural compound with superb medicinal properties to reach those patients that could most benefit from it. Allicin will therefore find a readily appreciative audience amongst those who purchase over the counter "medications" for a wide variety of conditions.

References

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5.2 Antiviral activity of ALLISURE™

Common Cold Prevention and Treatment

Peter Josling B.Sc. Hons. – The Garlic Centre

A double blind placebo controlled survey comparing an allicin containing garlic supplement [ALLISURE] with a placebo

Background

The Common Cold is the most widespread viral infection in the World today. It is estimated that most people will suffer 2 to 5 colds per year. Over 200 different viruses cause infection and cold symptoms, the most common of which are the Rhinoviruses which account for 30-40% of adult colds. Re-infection is also very prevalent because of this wide variety of infectious viruses.¹

Currently only a few publications exist to show the activity of garlic against viral infections.^{2,3} Hanley & Fenwick⁴ (1985) report that during an influenza epidemic, the former Soviet Union once imported over 500 tons of garlic cloves for the acute treatment of the disease. Among the viruses that are sensitive to garlic extracts are the human cytomegalovirus, human rhinovirus type 2, herpes simplex type 1 and 2 and influenza B virus. Evidence points towards allicin and its condensation product ajoene as the main components in garlic responsible for this antiviral activity. Recently ALLISURE Liquid and Capsules have been shown to be effective against Herpes Simplex type 1 and Molluscum Contagiosum viral infections.⁵

Traditionally many consumers take garlic supplements as a preventative measure and many report never getting a cold or symptoms associated with viral replication.

A “cure” for the common cold would significantly reduce the number of working days lost each year due to the classic symptoms of infection which include tiredness, headaches, a runny nose, sneezing, coughing, watery eyes and feeling unable to concentrate. Prevention is always better than simply treating symptoms and this survey is designed to see if a unique garlic supplement can prevent volunteers from getting a cold.

Although many garlic supplements are available in the UK, there is a wide variation in the type of supplement and an inadequate definition of active constituents within these health food products. However increasing evidence has shown that certain types of supplement may have significant beneficial properties, provided that the universally recognised active constituent (allicin) is made available to the body. We chose a new type of garlic supplement that only contains stabilised allicin. A literature review conducted by The Garlic Centre shows that the proposed anti-viral activity of garlic is almost certainly due to allicin and possibly a breakdown sulphur constituent known as ajoene. ALLISURE is the only supplement that actually claims to contain allicin as a starting material.

Study Objectives

1. To measure the number of colds recorded in each group as indicated by the scoring system detailed below. One group randomised to take ONE ALLISURE Capsule every day and one group randomised to take ONE PLACEBO Capsule every day for a period of 3 months.
2. As volunteers report an infection the period of time taken to full recovery will be monitored in each group.

Methodology

Following recruitment via PR in two daily Newspapers 144 participants were selected. A diary was designed for each volunteer to record progress over a 3-month period (90 days). Volunteers were asked to record general well being on a scale of 1 to 5 every day throughout the study period.

Symptom Measurement Scale

5 = Well no problems

4 = Quite well but the occasional sneeze no disruption 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 e.g. Headache, sneezing, runny nose, tiredness

If a cold developed then each volunteer was asked to note the number and variety of symptoms presented, the day they begin to recover and the day they felt completely better.

The 144 volunteers were split into 2 groups (sex, age and garlic consumption matched – see Table 1 Volunteer Demographics).

	ACTIVE	PLACEBO
Number of patients	73	73
Males	32	29
Females	41	44
Average age	52	53
Previously taken a garlic supplement	11	10

Table 1 Volunteer Demographics

Volunteers were then randomised, using a simple random number generator and assigned to the ACTIVE (Zero) or PLACEBO (One) group. Each volunteer was then instructed to take ONE CAPSULE every day with his or her main meal. This instruction follows the manufacturer's recommendation for taking a garlic supplement. Randomisation codes were kept securely 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 the diary was completed daily.

Diary Analysis

Following return of the diaries the number of colds experienced by volunteers was counted. A cold is defined as a score of 3 which then proceeds to a score of 2 or 1 and some symptoms are experienced.

The duration of symptoms was taken as the number of days with a recorded score of 2 or 1 leading to an average recovery time ending with a score of 4 or 5 taken across all recorded colds.

Results

The number of colds experienced in each group is shown in Figure 1 and the number of infected days and average number of days to a recovery is shown in Figure 2

The number of colds in the ACTIVE Group was 24 and the number of colds in the PLACEBO Group was 65. This result is highly statistically significant in favour of using ALLISURE as a cold prevention remedy. $p < 0.0001$

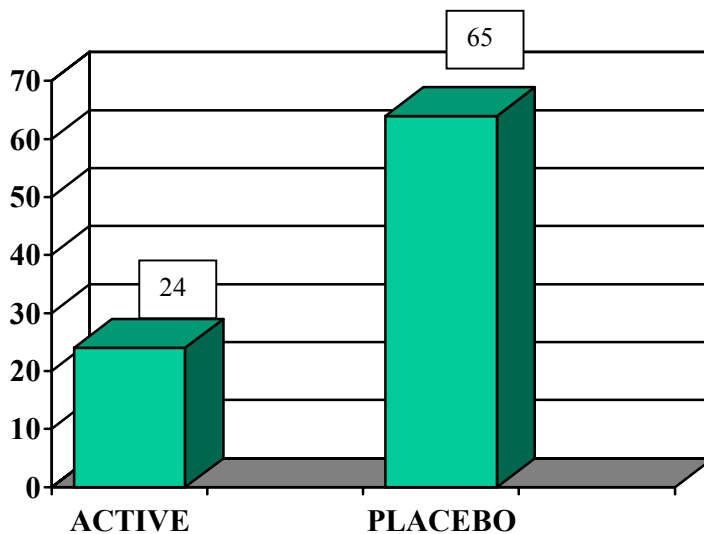


Figure 1 Number of colds suffered in each group

The average number of days needed to recover in the PLACEBO Group was 5.63 days (366 days of infection / number of colds) whereas in the ACTIVE Group this figure was 4.63 days (111 days of infection / number of colds). $p < 0.0001$

The number of volunteers experiencing more than 1 full cold throughout the survey period was much higher in the PLACEBO group as shown in Figure 3. A total of 16 volunteers became re-infected whilst taking PLACEBO as compared to only 2 volunteers taking the ACTIVE.

Diary Comments and Withdrawals

Volunteers were also asked to record ANY other factors that concerned them over the course of this study. Comments about the acceptability of taking capsules, side effects, smell and anything that might warrant a discontinuation of treatment, volunteers were encouraged to report these events in their diaries and to telephone The Garlic Centre if further advice was required.

Figure 2 Infected days and recovery period

TREATMENT	COLDS	INFECTED DAYS	RECOVERY PERIOD
One capsule per day with food			
ACTIVE (ALLISURE)	24	111	4.6
PLACEBO	65	366	5.6

There were a total of 4 withdrawals 3 from the ACTIVE group and 1 from the PLACEBO group. One from the ACTIVE group was withdrawn because the volunteer continued to take another garlic supplement. One from the ACTIVE group developed Gout and was advised to discontinue.

Figure 3 Frequency of re-infection

Volunteers experiencing more than 1 cold Throughout the survey period	
ACTIVE	2 (Two)
PLACEBO	16 (Sixteen)

One from the ACTIVE group developed an itchy rash below the knees, which faded away after stopping the treatment.

The PLACEBO volunteer developed severe headaches and was advised to stop taking the capsules.

A total of 5 volunteers noticed a “smell” whilst burping after taking capsules. Four were taking ACTIVE and 1 was taking PLACEBO. However it is not clear if they took capsules in accordance with the instructions (i.e. with their main meal). Several volunteers taking ACTIVE reported feeling much more alert and generally healthier even though close contacts around them were falling ill. Several volunteers taking ACTIVE took them on holiday and reported avoiding a stomach upset and not getting bitten by mosquitoes.

Conclusions

This survey is the first one to follow a double blind placebo controlled design in the area of viral disease prevention using a garlic supplement. The results are overwhelmingly in favour of **ALLISURE** as a disease prevention measure. Also in the treatment of troublesome symptoms such as a sneezing, cough and a runny nose, volunteers taking **ALLISURE** recover faster. Furthermore our data indicates a faster reduction in symptoms and recovery to full fitness. Volunteers taking the active prevention were also less likely to become re-infected from other viral strains indicating a general improvement in the immune system.

Another important point to note is that volunteers in the **ALLISURE** group took the manufacturers recommended daily dose of 1 capsule per day indicated in the commercially available product. Many other studies published on garlic supplements, for numerous applications over the last 10 years, have often used double or triple the actual dose available in retail outlets.

This approach may represent not only a “cure” for the common cold but it clearly shows that effective prevention of infection and re-infection may be gained from taking **ALLISURE** on a daily basis throughout the year. The overall potential savings to National Industrial Output by preventing workers from taking sick leave is enormous. This product clearly exhibits excellent antiviral activity and further work is recommended to determine the nature and method of viral destruction.

References:

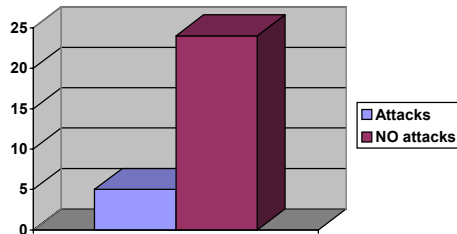
1. R Eccles Common Cold Centre Cardiff.
2. Koch and Lawson in Garlic – The Science and Therapeutic Application of Allium Sativum L and related species: Williams & Wilkins 1996.
3. Ankri & Mirelman, Microbes and Infection 2, 1999, 125-129
4. Hanley & Fenwick, Journal of Plant Foods 6; 211-238: 1985
5. Data on file at The Garlic Centre

6. Anti-histamine activity

A Pilot Investigation into the use of Allisure for the treatment of HAY FEVER (SEASONAL ALLERGIC RHINITIS) was carried out in 2002.

The survey was designed to determine whether a unique garlic supplement that contains only stabilized allicin could prevent the classic Hay fever attack from occurring amongst volunteers who have suffered for some years. The extract Allisure was chosen for study as it is the only product that claims to contain allicin as a starting material. 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 Allisure 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

- The overall AVERAGE SCORE was 3.95 indicating that Allisure 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 Allisure
- 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 Allisure 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 Allisure was easy to take and actually rather 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 whereas Allisure did. 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.

So this pilot investigation shows clearly 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, Clearly 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 Allisure compares with a chemical alternative. But for many people this represents a real chance to reduce the number of compromises that hay fever sufferers have to make each year. The full paper can be reviewed on [request](#).

7. METHOD OF ADMINISTRATION

Allisure Capsules contain allicin powder and are adapted for oral administration. It is recommended that they should be taken with food to minimise any risk of a smell developing.

However it is perfectly acceptable to break open the capsules and consume the powder by placing it onto or into food during preparation.

7. UNDESIRABLE EFFECTS

The incidence of side effects whilst taking ALLISURE is extremely low. Very few people report an odour whilst taking the product. Sensitivity can occur very infrequently and a rash is the most obvious sign. Any untoward side effects stop once the product is discontinued. Since ALLISURE is made from fresh garlic it can be seen to have a safety record dating back thousands of years and is unlikely to cause any problems. Always follow the recommendations stated on the packaging for taking ALLISURE capsules.

8. PREGNANCY AND LACTATION

There is no reason why ALLISURE should not be taken during pregnancy – indeed it may actually be beneficial to the fetus. Further information is available at <http://www3.mistral.co.uk/garlic>

9. USE IN CHILDREN

Generally supplements are not recommended for children under the age of 7 years. However, provided the recommended daily dose is not exceeded ALLISURE™ can be safely taken by children aged 7 and over.

10. PHARMACOLOGICAL/PHARMACOKINETIC PROPERTIES

The allicin powder that makes up ALLISURE™ is slightly acidic and as such it prefers the acid environment found in the human stomach. Since ALLISURE™ does not contain any alliin or alliinase enzyme it is impossible for the stomach acid to inactivate the allicin absorption. Therefore a genuine 100% yield is guaranteed from each dose of ALLISURE™ All other garlic supplements rely on your body being able to produce allicin and many are imperfectly protected against attack from stomach acid. Any acid contact will completely and irreversibly inactivate alliinase enzyme making production of allicin impossible.

Once absorbed, ALLISURE™ breaks down as predicted empirically to form a series of thiosulphinates compounds. None of these components can be easily measured or even detected in blood at present, although radiolabeling of allicin has been

performed to confirm the expected breakdown components. One extremely beneficial component formed is ajoene and this has also demonstrated significant antiviral properties.

11. PHARMACEUTICAL PARTICULARS

The active agent is allicin. Each capsule contains 300 mg of allicin powder.

11.1 List of excipients

Non genetically modified maltodextrin, gum acacia.

12. MARKETING DETAIL HOLDER

Allicin International Limited, Half House, Military Road, Rye, East Sussex TN31 7NY. United Kingdom.

13. DATE OF FIRST AUTHORISATION

24th April 2000

14. COUNTRIES THAT MARKET ALLISURE PRODUCTS

United Kingdom, Republic of Ireland, Norway, Canada, Denmark, Holland, Belgium, USA, Japan, Hong Kong, Greenland, Iceland,

15. LEGAL CATEGORY (United Kingdom)

Health Food Supplement

16. DATE OF LAST REVISION

This document was updated in May 2003

SMPC/5/03/PDJ