

## Supplement Sampler

### Garlic – “The Stinking Rose”, “Plant Talisman”, “Camphor of the Poor”

#### **Best Indications**

- **Common cold:** reducing incidence and duration.<sup>1</sup>
- **Hypertension:** drop in systolic (SBP) and diastolic blood pressure (DBP) seen in hypertensive patients.<sup>2</sup>
- **Topical ringworm, athlete's foot, and jock itch:** topical application of garlic (in gel or paste form) may help treat dermatophytosis.<sup>3</sup>
- **Atherosclerosis:** although current evidence suggests that it does not correct hyperlipidemia in humans, garlic has been shown to reduce progression of atherosclerosis via uncertain mechanisms in animal models.<sup>4-6</sup>

#### **Background**

Garlic's scientific name is Allium Sativum. Garlic has been referred to for various treatments in ancient medical texts from Egypt, Rome, China, India, and ancient Sumerians.<sup>7,8</sup> Ancient Greek Olympic athletes ate garlic for an athletic boost.<sup>7,8</sup>

#### **Mechanism of Action**

- **Hypertension:** current research shows that garlic activates constitutive nitric oxide synthase, thus causing vasodilation and reduction of blood pressure.<sup>2</sup>
- **Dermatophytosis and common cold:** an organosulfur component found in garlic, ajoene, has been found to have many antimicrobial and antifungal properties, including quorum sensing inhibition and antioxidant action.<sup>8,9</sup>

#### **Best Studies**

One study assessed 146 participants over a 3-month period, with half of the participants taking a placebo tablet, and half taking garlic (one capsule containing 180 mg allicin powder per day), noting cold-like symptoms during this period.<sup>1</sup> There were 24 occurrences of the common cold in the garlic group, versus 65 in the placebo group ( $P$ -value < 0.001), resulting in fewer days of illness in the garlic group compared with the placebo group (111 versus 366). It was also found that participants taking garlic who had cold symptoms had a shorter duration of illness (4.63 vs. 5.63 days), although the statistical significance of this was not reported. **Conclusion: garlic may help prevent common cold symptoms. It may shorten duration of illness as well, but this has not been proven.**

A meta-analysis of the effects of garlic on blood pressure included nine double blind trials with 482 individuals with follow up ranging from 8-26 weeks.<sup>10</sup> It was shown that SBP and DBP were more effectively reduced in individuals treated with garlic preparations than in individuals treated with placebo, with a SBP drop of 9.1 mm Hg (95% CI, 5.4 to 12.7). **Conclusion: Although the evidence is not strong, garlic is shown to lower BP in hypertensive individuals.**



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A study with ajoene has been shown to be effective in the short-term treatment of tinea pedis (twice-daily topical application during 1 week).<sup>3</sup> Seventy soldiers with clinical and mycologic diagnosis of tinea pedis were randomly distributed into three treatment groups: 0.6% ajoene, 1% ajoene, and 1% terbinafine. Of the 47 that presented for final evaluation 60 days after the end of therapy, there was 72% cure for the 0.6% ajoene, 100% cure for the 1% ajoene, and 94% cure for 1% terbinafine.

**Conclusion:** Compounds found in garlic can be therapeutic in human dermatophytosis.

### Adult Dosages

- Oral
  - Aged garlic extract: 0.4-1.2g daily in divided doses
  - Freeze-dried garlic tablets: 200mg, 2 tablets three times a day
  - Whole garlic cloves (as supplement): 2-5g per day (~2-5 cloves). Note: *the medicinal effects of garlic are most active 10-20 minutes after crushing a clove of garlic.*
- Topical
  - 0.6% ajoene gel for ringworm and jock itch, applied daily
  - 1% ajoene gel for athlete's foot, applied daily

### Adverse Effects

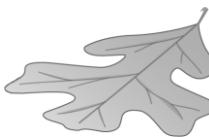
- Garlic is typically used for culinary purpose with essentially no adverse effects, but the long term and high dosages have not been studied extensively.
- Most common concerns include body odor and malodorous breath.
- There are mild gastrointestinal reactions including bloating, flatulence, nausea and irritation.<sup>11</sup>
- Large doses may increase risk of postoperative and spontaneous bleeding.<sup>11</sup>
- Ingestion or topical exposure may lead to allergic reaction (including, but not limited to, contact dermatitis, urticaria, anaphylaxis, photoallergy, or angioedema)
- Consumption by breastfeeding mothers may impact infants' behavior during breastfeeding, including prolonged attachment, sucking.<sup>12</sup>
- There have been documented emmenagogue effects (increases blood flow to pelvis, potentially encouraging menses) in women.

### Cost

- 32oz minced garlic ~ \$5-8
- Odorless garlic capsules 1000mg, 100 capsules ~ \$6-14
- 1lb fresh garlic ~ \$2-6

### Comments/Bottom Line

Garlic seems to be a safe, easy, and effective botanical for use in treating conditions ranging from ringworm to hypertension. Although additional evidence is needed to truly cement garlic for widespread use, current studies indicate that garlic is a generally safe alternative for those seeking a non-pharmaceutical supplement for prevention of the common cold, as well as playing a role in the reduction of hypertension and treatment of topical fungal infections. It is important to note that even though garlic is seen as generally safe in moderate doses, any herbals taken should be done so under the supervision of a health professional.



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### References

1. Lissiman E, Bhasale AL, Cohen M. Garlic for the common cold. *Cochrane Database Syst Rev*. 2014;11. Art. No.: CD006206. DOI: 10.1002/14651858.CD006206.pub4.
2. Morihara N, Somioka I, Moriguchi T, Uda N, Kyo E. Aged garlic extract enhances production of nitric oxide. *Life Sci*. 2002;71(5):509-517.
3. Ledezma E, Marcano K, Jorquera A, De Sousa L, Padilla M, Pulgar M, Apitz-Castro R. Efficacy of ajoene in the treatment of tinea pedis: a double-blind and comparative study with terbinafine. *J Am Acad Dermatol*. 2000;43(5 Pt 1):829-832.
4. Beckert BW, Concannon MJ, Henry SL, Smith DS, Puckett CL. The effect of herbal medicines on platelet function: an in vivo experiment and review of the literature. *Plast Reconstr Surg*. 2007;120(7):2044-2050.
5. Orekhov AN, Grunwald J. Effects of garlic on atherosclerosis. *Nutrition*. 1997;13(7-8):656-663.
6. Berthold HK, Sudhop T. Garlic preparations for prevention of atherosclerosis. *Curr Opin Lipidol*. 1998;9(6):565-569.
7. Rivlin RS. Historical perspective on the use of garlic. *J Nutr*. 2001;131(3s):951S-954S.
8. Petrovska BB, Cekovska S. Extracts from the history and medicinal properties of garlic. *Pharmacogn Rev*. 2010;4(7):106-110.
9. Jakobsen TH, Van Gennip M, Phipps RK, et al. Ajoene, a sulfur-rich molecule from garlic, inhibits genes controlled by quorum sensing. *Antimicrob Agents Chemother*. 2012;56(5):2314-2325.
10. Rohner A, Ried K, Sobenin I, Bucher H, Nordmann A. A systematic review and metaanalysis on the effects of garlic preparations on blood pressure in individuals with hypertension. *Am J Hypertens*. 2014 Sep 18. pii: hpu165. [Epub ahead of print].
11. Borelli F, Capasso R, Izzo AA. Garlic ( Allium sativum L.): adverse effects and drug interactions in humans. *Mol Nutr Food Res*. 2007;51:1386-1397.
12. Mennella JA, Beauchamp GK. Maternal diet alters the sensory qualities of human milk and the nursing's behavior. *Pediatrics*. 1991;88(4):737-744.

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