



Health Benefits of Garlic

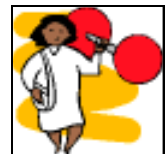


History

The potency of garlic has been acknowledged for more than 500 years. In the ancient times, garlic was used as a remedy for intestinal disorders, flatulence, worms, respiratory infections, skin diseases, wounds, symptoms of aging, and many other ailments. Through the middle ages into World War II, the use of garlic to treat wounds surfaced repeatedly. It was ground up or sliced and was applied directly to wounds to inhibit the spread of infections.

To date, there are more than 3000 publications from all over the world that have confirmed the recognized health benefits of garlic. Favorable experimental and clinical effects of the consumption of garlic preparations (including garlic extract) have been reported. These biological responses include:

- Reduction of risk factors for cardiovascular disease and cancer
- A stimulation of immune function
- Enhanced foreign compound detoxification
- Radioprotection
- Restoration of physical strength



Garlic preparations

It has long been known that extraction of a food compound can increase its potency. The acidic and oxidizing compounds in raw garlic have been shown to exhibit hypolipidemic, antiplatelet, and procirculatory effects. Aged garlic extract (AGE) has been reported to possess hepatoprotective, immune-enhancing, anticancer, and chemoprotective activities. In addition, AGE exhibits antioxidative activities, whereas, raw or heated garlic stimulates oxidation.

Clinical Reports on Garlic

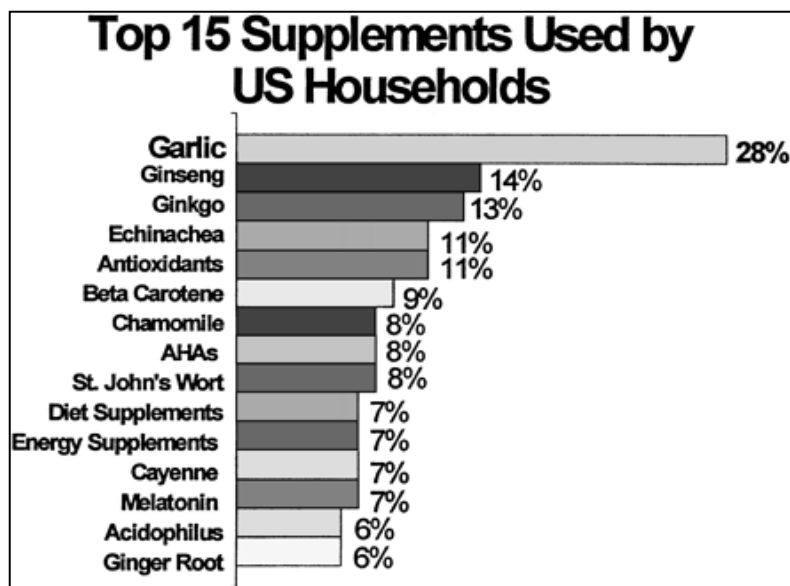
Several clinical reports have revealed a cholesterol-lowering effect of garlic in humans. This has confirmed a long held belief about garlic's role in health and in particular cholesterol control. Recent publications suggest that not all preparations are equally effective. The cause of this is likely to be related to the components present in the preparation, the quantity of the preparation provided and the duration of the study.



Facts on Garlic



According to the USDA National Agricultural Statistics Service, the amount of garlic produced in the United States in 1998 was ~252,000 metric tons. Over 60% of the garlic consumed worldwide is produced in California. Garlic products have experienced increasing popularity in the last decade.



Of 91 herbal supplements, garlic was found to be used more than twice as much as other supplements.

-1997



The appropriate amount of garlic to consume is yet to be determined. The German Commission E monograph (1998) proposed a daily intake of ~1-2 cloves of garlic or ~4 g of intact garlic per day for maximal health benefits. However, there was no scientific evidence to back this recommendation.



Garlic supplements

Essential oil
Dehydrated powder
Oil macerate
Extract

Essential Oil

The essential oil content of garlic cloves is 0.2-0.5% and consists of a variety of compounds. It is obtained by steam distillation of garlic. Commercially available garlic oil capsules contain vegetable oil and a small amount of garlic essential oil because of the pungent odors.



Dehydrated Powder

Garlic powder is mass-produced as a flavoring agent for condiments and processed foods. Garlic cloves are sliced or crushed, dried and pulverized into powder. Garlic powder is thought to retain the same ingredients as raw garlic; however, the proportions and amounts of various constituents differ significantly.



Oil macerate

Oil macerates were originally developed for use as condiments. Oil macerate products are made of encapsulated mixtures of whole garlic cloves ground into vegetable oil.



Extract

For garlic extract, whole or sliced garlic cloves are soaked in an extracting solution (purified water and diluted alcohol) for varying amounts of time. After separation of the solution, the extract is concentrated and used. The extract, especially AGE, contains mainly the water-soluble constituents in garlic and a small amount of the oil-soluble compounds.

AGE, as the name implies, is aged for up to 20 months. Over this time, the harsh and irritating compounds in garlic are converted naturally into stable and safe sulfur compounds. AGE contains primarily water-soluble sulfur compounds as well as a smaller amount of a variety of oil-soluble sulfur compounds. The safety of AGE has been confirmed by various toxicological studies.



S-allyl cysteine (SAC) is one of the water-soluble organosulfur compounds in garlic that can be detected in the plasma, liver, and kidney after oral intake. Its concentration increases during extraction and aging. From several studies, SAC has proven to be a stable, odorless, water-soluble compound with the ability to lower cholesterol, serve as an antioxidant, inhibit the cancer process, and protect the liver from toxins. At present, SAC is the only reliable human compliance marker used for studies involving garlic consumption because it is detectable and increases quantitatively in the blood after oral intake of garlic capsules.



Pennington Nutrition Series, Number 20,
2005

Authors:

Heli Roy, PhD, RD
Shanna Lundy, BS
Beth Kalicki

Division of Education

Phillip Brantley, PhD, Director
Pennington Biomedical Research Center
Claude Bouchard, PhD, Executive Director

Edited : October 2009

References:

Harunobu A, et al. *Journal of Nutrition*.
2001. 131(3): 955-962.

The Pennington Biomedical Research Center is a world-renowned nutrition research center.

Mission:

To promote healthier lives through research and education in nutrition and preventive medicine.

The Pennington Center has several research areas, including:

- Clinical Obesity Research
- Experimental Obesity
- Functional Foods
- Health and Performance Enhancement
- Nutrition and Chronic Diseases
- Nutrition and the Brain
- Dementia, Alzheimer's and healthy aging
- Diet, exercise, weight loss and weight loss maintenance

The research fostered in these areas can have a profound impact on healthy living and on the prevention of common chronic diseases, such as heart disease, cancer, diabetes, hypertension and osteoporosis.

The Division of Education provides education and information to the scientific community and the public about research findings, training programs and research areas, and coordinates educational events for the public on various health issues.

We invite people of all ages and backgrounds to participate in the exciting research studies being conducted at the Pennington Center in Baton Rouge, Louisiana. If you would like to take part, visit the clinical trials web page at www.pbrc.edu or call (225) 763-3000.