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Review Article

A Comparative review on ginger and garlic with their Pharmacological Action

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ABSTRACT

It is a therapeutic aspect of medicinal herbs mentioned here. Herbal plants can treat various diseases and ailments—the list of antioxidant included antioxidant, anti-inflammatory, anti-rheumatic, and circulation enhancer. It would be of great benefit in medical and surgical treatment. Those are fantastic. The promotion of the health system is easier, with medicinal plants than synthetic drugs.

Keywords: Ginger; Antioxidants; Garlic; Analgesic.

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INTRODUCTION

Plants have a lot of promise in the treatment and control of certain diseases. There are numerous plants used in the world for various medicinal purposes.^[1] Besides using spices food processing, they can use animal health treatment due to their therapeutic functions. Currently, there are many therapeutics being tested for their medical potentials. In previous research, spices have been found to possess medicinal properties^[2]. The greater demand for alternatives to traditional medications is primarily due to the declining quality of conventional medication and their prohibitive cost for many customers—natural substances. Taiwan, India,

Nigeria, and Bangladesh.^[3] This species has been found in warm climates^[4]. Ginger has been highly used in herbal medicine for many years. The Chinese have long utilized ginger for its anti-inflammatory properties. It is thought to help treat baldness, snakebites, toothaches, and respiratory disorders. Arabs assume that ginger has aphrodisiac properties, and hence it is commonly used in their traditional medicine.^[5]

GINGER

Zingiber officinale belongs to the genus Zingiberaceae.(table 1) This vine, known as horseradish, is also used for both medicinal and culinary purposes. The ginger gene is found all over the world. Ginger to relieve

nausea, treat stomach aches. In medicine, ginger is considered an aphrodisiac. Also, ginger has been used to repel mosquitos. The ginger rhizomes figure is shown in 1. Oil from ginger is known to be therapeutic.^[6] The ginger plant's rhizome (Fig: 1)



Figure 1: Diagram of Ginger Rhizome.

Medicinal Activities of ginger

Activities of Anti-ulcer and anti-cholinergic:

Ginger (*Zingiber Officinale*) affects various agents that could affect gastric mucosa and has antioxidant properties. Prostaglandin has both advantages and disadvantages, such as preserving gastric integrity and promoting a balanced intestinal function. Ginger has good antiemetic properties, which helps alleviate nausea and vomiting.^{[6][7]}

Activities of Antioxidant, anti-inflammatory and rheumatologic properties of Ginger:

Several studies have documented that ginger oil has a neuroprotective impact due to the content of volatile oils. Ginger is an important antibiotic. In certain research, extracts of ginger have been shown to have anti-cancerous effects. Ginger modulates biological processes which are related to genetic stability and suppression of tumour cells. Studies have reported strong anti-platelet and COX-I inhibitory properties from gingerols and paradol. [8] It reported that ginger works by preventing the underlying causes of Inflammation, such as leukotriene biosynthesis, and by reducing inflammation through prostaglandin biosynthesis inhibition. Sun Simulator is known to support rheumatic conditions.

Analgesic effect^{[8][9]}

Gingerols, which are the primary ingredient of ginger, were shown to have some interesting pharmacological effects. It is a commercially available drug, and its use is endorsed in clinical trials. This action is likely to result from the increases of serotonin receptors such as 5-HT₃. Ginger can relieve a headache and reduce unpleasant symptoms. The real result of this study is assumed to be through the prevention of annoying prostaglandin synthesis.

Activities of Blood circulation and anti-cramp effect^[10]

Ginger was evaluated to improve blood serum supply by stimulating the heart muscles and diluting the body's circulating blood. For this purpose, gentle exercise will deliver good results.

Activities of Cholesterol regulation and hypo-tensive properties^[11]

It is known that ginger is effective in lowering blood glucose level when taken in dried form. Then lowers the cholesterol level in the body. Long term use of statins results in elevated HDL cholesterol concentrations (Table-2). There is scientific evidence that ginger has a hypotensive effect when at 0.3 to 3 mg/kg. Magnesium sulphate binds to antithrombin III and prevents it from binding to its substrates. Studies suggest that ginger extract can enhance insulin sensitivity in the body. By eating ginger^[12], the user can recover energy.

Antimicrobial effects:

Several phenols in ginger have shown. Ginger root is used around the world for the preservation of foods. Ginger is protective against parasitic infection. Several studies showed the ingestion of crude or methanolic extract of *Zingiber officinale* against trypanosomiasis [12,13,14]. There are various fungal species in that ginger is effective. There is a study stating that ginger has a powerful antiviral effect. Medicinal plants are cultivated. In African countries, the plant is an effective treatment for abdominal pain, diarrhoea and respiratory tract infections.

Medical action of garlic Antioxidant, anti-inflammatory and antistress properties

It also conjectured that compounds of garlic (fig.2) could be capable of maintaining glutathione. found that wister rats that have been conditioned to exhaustion to minimize their physical fatigue increased their aerobic glucose metabolism,^[15] gained from decreased oxidative stress, and experienced even more improvement in vasodilation with supplementation of garlic.(Table 1) Some controlled research studies indicate that consumption of garlic may have major health benefits.^[16]



Figure 2: Diagram of Garlic Bulb**Anticancer properties:** ^{[18][19][20]}

Consuming garlic decreased an individuals' cancer production in the Netherlands cohort sample. The ingestion of garlic will minimize the incidence of oesophagal, stomach and colon cancer. One of the advantages of Allicin is that it reduces the formation of the compounds that cause cancer in the digestive system. There was also a reduction in the risk of urinary tract cancer for physically active men. Prostate-specific antigen (PSA) levels dramatically decreased at four weeks.

For curement of cardiovascular disease ^{[21][22]}

Several studies have shown a high association between garlic consumption and improved heart health. In these cases, garlic may protect against heart disease and high cholesterol. A review showed that from the total of 432 patients diagnosed with coronary artery disease, 402 were given garlic-laced milk to drink, while 104 patients drank only plain milk. Analysis of results reveals that garlic juice decreases the death risk of patients who had lung cancer. ^[23]

Antidiabetic property

Some animal research suggests that garlic decreases blood glucose levels and alloxan (in some types of mice) induced

diabetes. it was being reported that the diabetic effect of garlic is more effective than glibenclamide. ^[24]

Action on Immunity booster ^{[25][26][27][28][29]}

Garlic root is alleged have antioxidants that enhance the body's immune function. It is a significant part of the immune system as it makes the cells called killer cells more active. It has been shown that garlic is very effective for fighting off disease. There is an outstanding amount of germanium occurring in this substance.

Activities on Regulation of blood pressure ^{[30][31]}

For decades, garlic has also been regarded as the most common spice to regulate blood pressure and hypertension. ^[30-36] In vitro research suggests that garlic has vasoactive properties and that organic garlic polysulfides enable endogenous cardioprotective mediators' development.

Antimicrobial effects ^{[37][38][39][40]}

Garlic is known to be safer than standard drugs as a result of fewer side effects. Ajoene has been reported to be an effective topical antifungal agent [32] Amoeba is killed by levels that are just 30µg/ml of Allicin. (Table-2) At very low concentrations (5 µg/ml), Allicin exhibited antileishmanial activity.

Table 1 Brief biological details on ginger and garlic ^[38]

Type of biological specification	Name of the plant	
	Ginger	Garlic
Morphology	2-3 feet	Height is approx 60cm
Colour	Carrot orange	White, purple
Shape	irregular	Phallic
Characters	Monocot	Monocot
Family name	Zingiberaceae	Amaryllidaceae
Botanical name	Zingiber officinale	Allium sativum

Table 2: Bioactive constituent of onion, ginger and garlic ^[32-34]

Name of the plant	Name of chemical constituent	Formula
Ginger	Gingerol	C ₁₇ H ₂₆ O ₄
	Shogaol	C ₁₇ H ₂₄ O ₃
Garlic	Alliin	C ₆ H ₁₁ NO ₃ S

	Ajoene	C ₉ H ₁₄ OS ₃
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Table 3: Common Therapeutic Indications of Ginger and Garlic ^{[7][40]}

Name of pharmacological effect	Name of the plant	
	Ginger	Garlic
Anti-ulcer and anti-cholinergic	•	•
Antioxidant, anti-inflammatory	•	•
Rheumatologic	•	•
Analgesic effect	•	•
Anti-diabetics	•	•
Anticancer properties	•	•
Antimicrobial effects	•	•

CONCLUSION

Based on literary evidence Ginger, and garlic have significant medicinal effects. They've been shown to have certain therapeutic properties such as "antioxidant, anti-inflammatory, rheumatologic, blood circulation booster, anti-cramp, anti-ulcer, anti-cholinergic, analgesic, antimicrobial, anti-stress, anticancer, immunity booster and anti-diabetic." They are also interested in blood pressure management and treating heart disorders. These herbs are rich in essential elements essential for human body development.

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