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Health benefits of Gingerol and other chemicals of Ginger (Review)

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ABSTRACT *Ginger (Zingiber officinale) belongs to Zingiberaceae family, its root or underground stem (rhizome) can be consumed fresh, powdered, dried as a spice(Baliga et al.,2012) or as juice. Ginger has been used for its medicinal properties for centuries among many cultures. Ginger is often consumed in small amounts, so does not add significant quantities of calories, carbohydrates to the food. Presence of 3% natural essential oils gives it spicy aroma. Ginger possesses numerous health benefits like antimicrobial, antiviral, gastroprotective, antidiabetic, anti-hypertensive, cardioprotective, anticancer, chemo preventive and immunomodulatory effects. Ginger's flavour is influenced by a number of compounds; the pungency of fresh ginger comes from gingerol. Cooking ginger breaks down gingerols into the compound zingerone, which is less pungent. Another class of compounds formed during cooking are the shogaols, which also contribute to flavour & pungency.*

Historically, ginger has a long tradition of being very effective in alleviating symptoms of gastrointestinal distress. Ginger is regarded as an excellent carminative and intestinal spasmolytic (a substance which relaxes and soothes the intestinal tract). Certain studies have revealed that ginger possesses numerous therapeutic properties including antioxidant effects, an ability to inhibit the formation of inflammatory compounds, and direct anti-inflammatory effects.

Various beneficial substances present in ginger are gingerols, beta-carotene capsaicin, caffeic acid, curcumin and salicylate, other vitamins and minerals which are present in ginger are Sodium, Vitamin C, B_6, Calcium, Iron, Vitamin, Potassium, Magnesium, Phosphorus, Zinc, Riboflavin, Niacin, and Iron.

Ginger increases saliva and other digestive fluids, alleviating indigestion and flatulence. Ginger can have a calming effect on the organs and help those suffering from bloating, gas and stomach discomfort.

(Blunden, Tanira and Nemmar (2008) found that Phytochemicals present in ginger have strong anti-cancer activities. Ginger also protects stomach from ulcers as it eliminates strains of Helicobacter pylori, the bacteria that are the principal cause of stomach ulcers (Haniadka et al., 2013) and some stomach cancers.

Ginger has anti-inflammatory qualities that relieve swelling and pain. Having somewhat analgesic properties, it aid sore joints and muscles, evidence suggests that it can help ease arthritis symptoms and osteoarthritis.

Ginger has been shown to lower high cholesterol and triglyceride levels, while raising beneficial HDLs (high density lipoproteins, or "good" cholesterol). It improves circulation by reducing platelet stickiness, and hence reduces the risk of heart attacks and strokes.

Ginger is beneficial for diabetic patients and can also help prevent abdominal weight gain.

Ginger is a scavenger of free radicals, studies show that increased generation of reactive oxygen species (ROS) and reactive nitrogen species (RNS) are implicated in various liver diseases, ginger extracts, oleoresins and the volatile oils possess free radical scavenging effects, and to be effective in scavenge, superoxide, hydroxyl, nitric oxide in vitro(Baliga et al.,2003)

Ginger can help fight allergies, ease headaches, sore throats and assist persons suffering from cold or flu, nausea (Palatty et al., 2013) and morning sickness, or who suffer from motion sickness.

Ginger helps to promote healthy sweating, which is often helpful during colds and flu. A good sweat has many positive health effects in addition to detoxification. Researchers have recently found that sweat contains a potent germ-fighting agent that may help fight off infections.

Ginger possesses anti-inflammatory effects (Grzanna, Lindmark & Frondoza, 2005) and certain studies have shown that it inhibits the enzymes required for synthesis of prostaglandins and leukotrienes, namely, cyclooxygenase and lipooxygenase respectively (Srivas, 1984)

Ginger protects the liver against the toxic effects of diverse class of xenobiotic agents like alcohol (Shati & El-said, 2009), heavy metals (Vitalis et al., 2007), paraben (Verma & Asnani, 2007) and bromobenzene (Sharaky et al. 2009).

Shogaol found in ginger has a strong anticoughing effect; another compound gingerol of ginger has anti-inflammatory & analgesic properties.

SIDE EFFECTS; It is advisible not to take more than four grams of ginger in a single day and also care must be taken to avoid interaction with certain medications such as blood thinners, including aspirin. Side effects also include bloating, gas and heartburn.

CONCLUSION; Because of its pungent taste and interesting aroma, ginger has been used since the ancient times as a spice. Also it has medicinal value in a wide variety of diseases, especially in gastrointestinal disorders, such as constipation, diarrhoea, anorexia, colic dyspepsia, nausea, vomiting, and motion sickness. Many investigations show that Ginger shows Anti-inflammatory, Anti-thrombotic,

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Cholesterol-lowering Blood pressure-lowering, Antimicrobial, Antioxidant, Antitumor, and Hypoglycaemic properties. The consumption of excessive ginger should be avoided as it may cause bloating, gas and heartburn also it may interact with certain medications.

REFERENCE Ali BH, Blunden G, Tanira MO, Nemmar A (2008) some phytochemical, pharmacological and toxicological properties of ginger (Zingiber officinale Roscoe): A review of recent research. Food Chem Toxicol 46: 409-420. Al-Tahtawy RHM, El-Bastawesy AM, Monem MGA, Zekry ZK, Al-Mehdar HA, et al. (2011) Antioxidant activity of the volatile oils of Zingiber officinale (ginger). Spatula DD 1: 1-8. Baliga MS, Haniadka R, Pereira MM, Thilakchand KR, Rao S, et al. (2012) Radioprotective effects of Zingiber officinale Roscoe (ginger): Past, present and future. Food Funct 3: 714-723. Baliga MS, Jagetia GC, Rao SK, Babu K (2003) Evaluation of nitric oxide scavenging activity of certain spices in vitro: A preliminary study. Nahrung 47: 261-264. El-Sharaky AS, Newairy AA, Kamel MA, Eweda SM (2009) Protective effect of ginger extract against bromobenzene-induced hepatotoxicity in male rats. Food Chem Toxicol 47: 1584-1590. Grzanna R, Lindmark L, Frondoza CG (2005) Ginger--An herbal medicinal product with broad anti-inflammatory actions. J Med Food 8: 125-132. Haniadka R, Saldanha E, Sunita V, Palatty PL, Fayad R, et al. (2013) a review of the gastroprotective effects of ginger (Zingiber officinale Roscoe). Food Funct 4: 845-855. Palatty PL, Haniadka R, Valder B, Arora R, Baliga MS (2013) Ginger in the prevention of nausea and vomiting: A review. Crit Rev Food Sci Nutr 53: 659-669 Shati AA, Elsaid FG (2009) Effects of water extracts of thyme (Thymus vulgaris) and ginger (Zingiber officinale Roscoe) on alcohol abuse. Food Chem Toxicol 47: 1945-1949. Srivas KC (1984) Effects of aqueous extracts of onion, garlic and ginger on platelet aggregation and metabolism of arachidonic acid in the blood vascular system: in vitro study. Prostaglandins Leukot Med 13: 227-235. Verma RJ, Asnani V (2007) Ginger extract ameliorates paraben induced biochemical changes in liver and kidney of mice. Acta Pol Pharm 64: 217-220. Vitalis EC, Chukwemeka R, Philippe ME, Chinonso NC (2007) Effects of Zingiber officinale on liver function of mercuric chloride-induced hepatotoxicity in adult Witar rats. Electron J Biomed 3: 40-45