



A REVIEW ON MEDICINAL USES OF ZINGIBER OFFICINALE

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ABSTRACT:-

Rhizome of Zingiber officinale(gusto) is considerably used in medicinal purpose. Ayurveda literatures highlight administration of gusto in both of transmissible andnon-communicable conditions. Recent advances in logical chemistry, cytology and microbiology recommend operation of gusto in colorful complaint conditions as well as recommendations in Ayurveda literature. The current study concentrated on review ethno medicinal value of Z. officinale including antiviral effect, radioprotective effect,anti-inflammatory effect, anticancer effect and antioxidant effect with special reference to Ayurveda recommendations. The study elaborates; gusto is effective in viral infections and revitalizing the body at complaint conditions according to both of Ayurveda and ultramodern generalities through enhancing appetite, immunity andre-boosting weakened physiological functions of the mortal body. Active constituents which available in gusto similar as 6- gingerole, 6- shogaol, 6- paradol. zingerole and zerumbone are responsible in upgrading enzyme conduct and balancing rotation through invigorating the body with physicalre-strengthening.

Key Words: ginger, antipyretic, anti-inflammatory, anticancer, antioxidant

1.INTRODUCTION:

The spermatophyte ginger (*Zingiber officinale*) has a rootstock known as ginger root or ginger that is widely used as a spice and human treatment. It is a nonwoody perennial that produces around one metre tall annual pseudostems, or artificial stems made from rolled leaf bases, with thin leaf blades. The inflorescences, which sprout from the rhizome on distinct branches, contain flowers with straw petals and purple borders. Ginger is a member of the monocot family, which also contains galangal, cardamom, and turmeric (*Curcuma longa*). Ginger was likely domesticated for the first time by the Austronesian peoples and has its origins in Maritime Southeast Asia. With the Austronesian expansion (about 5,000 BP), they carried it with them across the Indo-Pacific, all the way to Hawaii. Ginger is one of the most common

SYNONYM OF GINGER:

1. Zingiber
2. Zingiberis
3. Sunthi

Biological Source:

Ginger consists of whole or cut, dried scrapped or unscrapped rhizomes of *Zingiber officinale* Roseoe, family Zingibreaceae. It contains not less than 0.8 percent of total gingerols on dried basis.

Family: Zingiberaceae

2.0 literature of Review

Mohammad Sharrif Moghaddasi, And Hamed Haddad Kashani. Et.al.(2021)

Ginger is used worldwide as a cooking spice, condiment and herbal remedy. Ginger is used extensively In Ayurveda, the traditional medicine of India to block excessive clotting (that is, heart disease), reduce Cholesterol and fight arthritis. In Arabian medicine, ginger is considered an aphrodisiac. The Eclectic Physicians of the 19 century relied on ginger to induce sweating, improve the appetite and curb Nausea, and as a topical counterirritant. Nowadays, ginger is extensively cultivated from Asia to Africans the Caribbean, and is used worldwide as a nausea remedy, as an anti-spasmodic and to promote Warming in case of chills as presented in this report.

Styawan, A.A., Susidarti, R.A., Purwanto, Windarsih, A., Rahmawati, N., Sholikhah, I.K.M. and ,Rohman, A. Et.al.(2022)

Zingiber officinale Roscoe, known as ginger has been widely used as a spice in food Application and as a herbal component in traditional medicine. Its rhizome is known to Have bioactive compounds such as phenolic compounds, flavonoid compounds, and Essential oils which are responsible for pharmacological activities. Gingerol is the major Phenolic compound in the ginger rhizome which consist of gingerol, shogaol, paradol, Zingerol, gingerones, and gingerdiones.

Vijay Yadav, Piyush Yadav, Shradha Sahu, Mukesh Yadav, Shyam narayan gupta.et.al.(2021)

Ginger (*Zingiber officinale*) is a flowering plant whose rhizome, ginger root or ginger, is widely used as A spice and a folk medicine. Ginger is loaded with antioxidants, compounds that prevent stress and Damage to your bodys DNA. They may help your body fight off chronic diseases like high blood pressure, Heart disease, and diseases of the lungs, plus promote healthy aging .Doctors recommend consuming a Maximum of 3–4 grams of ginger extract per day. If youre pregnant, dont consume more than 1 gram Of ginger extract per day.

General Category:

TERPENOIDS:

terpenoids, additionally called isoprenoids, ar an oversized and various category of present organic chemicals derived from the 5-carbon compound isoprene, and also the isoprene polymers referred to as terpenes... Terpenoids ar the most important category of plant secondary metabolites, representing regarding hr of noted natural product

CLASSIFICATION OF TERPENOIDS:

:

- 1) Monoterpenoids
- 2) Sesquiterpens
- 3) Diterpenoids
- 4) Triterpenoids
- 5) Tetraterpenoids

3.0 Objectives:

The different objectives of study of GINGER.:

To know the morphology of GINGER

To know about physical characteristics & chemical test of GINGER.

To aware about medicinal & pharmacological effect of GINGER

To understand side effect & interaction of GINGER Awarea bout different marketed preparations.

SCOPE OF THE PRESENT WORK:

1. It has lots of medicinal properties.
2. Ginger is a stem and not a root.
3. It is brown in colour.
4. Ginger is used as a cooking spice.
5. Ginger is used in tea and vegetables

Monoterpenoids: Monoterpenes are a category of terpenes that include 2 isoprene units and have the chemical formula $C_{10}H_{16}$. Monoterpenes is also linear (acyclic) or contain rings (monocyclic and bicyclic). changed terpenes, like those containing gas practicality or missing a alkyl group, ar referred to as monoterpenoids.

Sesquiterpenes:

Sesquiterpenes square measure a category of terpenes that include 3 isoprene units and infrequently have the chemical formula $C_{15}H_{24}$ organic chemistry modifications like oxidization or arrangement turn out the connected sesquiterpenoids.

Triterpenoids:

The triterpenoids square measure fashioned biosynthetically from six isoprene units and share in common the C_{30} acyclic precursor squalene. differing kinds of ring closure in squalene will create to several completely different skeletal styles of triterpenoids. In fact, over 4000 natural triterpenoids are isolated, and over forty skeletal sorts are known. The triterpenoids will be divided into 2 main classes: the tetracyclic compounds and also the pentacyclic compounds. Also, within the later stages of biogenesis, small carbon fragments could also be removed to provide molecules with but thirty carbon atoms, as an example, the C_{27} steroids. Most triterpenoids square measure alcohol and might mix with sugars to create glycosides, that is that the case with saponins. Free triterpenoids square measure typically elements of resins, latex, or the cuticle of plants. Triterpenoids that square measure ecologically important embrace the cucurbitacins and quassinoids, that have a bitter style which will be a defense against herbivory, and also the saponins, that square measure toxic to cold-blooded animals, like mollusks. The limonoids, a bunch of tetranortriterpenoids, have insect antifeedant properties

Diterpenoids

Diterpenoids are unit chemical compounds containing twenty carbon atoms and belong to the terpenoid category. They derive from geranylgeraniol, a C₂₀ precursor, have a C₂₀H₃₂ basic structure, and are unit composed of 4 isoprene units. These options build diterpenoids completely different from straightforward terpenes, that possess solely ten carbon atoms. A diterpenoid molecule might also embody alcohol, phenol, aldehyde, cheton, or acidic useful teams. These compounds are unit extremely lipotropic, odorless, and will possess robust flavours

Classification:

Kingdom: Plantae

Clade: Tracheophytes

Orde: Zingiberales

Family: Zingiberaceae

Genus: Zingiber

Speciec : Z.officinale

Bionomial name: Zingiber officinale

GROW GINGER

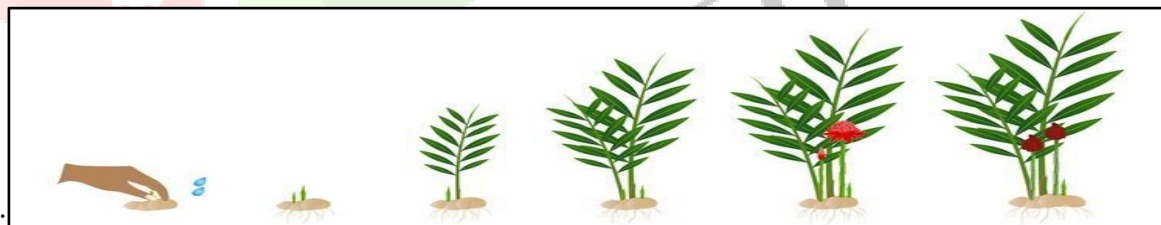


Fig1.GROW GINGER

Ginger Plants:

Plant History:

The ginger plant was initially cultivated in geographical areas around fashionable Indonesia, Malaysia, Singapore, and therefore the Philippines. Historians don't recognize specifically however ginger cultivation initially began, however they are doing are aware of it goes back centuries – over five,000 years ago.

Propagation:

Growing from rhizomes (the part of the ginger we commonly call the root), ginger can be easily propagated by division. If you've never grown ginger before, this process can be done with fresh ginger rhizomes from your local grocery store. If you have some ginger in the garden already, simply lift a rhizome out with a fork and follow the same process.

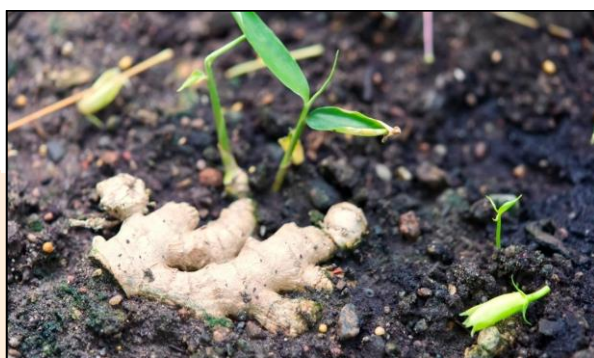


Fig2. Root division is the most common and simplest way to propagate ginger.

:Water:

The most vital condition to observe once growing ginger is water levels. Ginger likes to grow in wet soil, because of their tropical environments. However, the stalk is susceptible to putrefaction – a tangle which will quickly ruin your entire harvest. It's crucial to urge the balance of watering right once caring for ginger:

As mentioned, recently planted ginger rhizomes solely would like light-weight watering to encourage growing and root development. This watering is solely to moisten the soil, instead of water the particular plant. Once roots begin to develop and therefore the leaves sprout, you'll be able to increase your watering.



Fig3. Soil that holds ginger should be moist and not too wet to avoid root rot.

Soil:

Ginger appreciates well-draining soil with plenty of organic matter mixed in. Enriching with compost is ideal as it provides nutrients and aids in moisture retention at the same time.

growing on forest floors, ginger is used to nutrient-rich, humus-like soil and won't appreciate poor quality soil. mulching with a layer of compost or any other organic material will retain moisture and slowly break down into the soil, increasing nutrient levels.



Fig4. Nutrient-rich soil that is moist and well-draining is perfect for growing ginger.

Cultivation & Collection:

The size of the seed ginger, known as rootstock, is crucial to the assembly of ginger. The larger the rootstock piece, the quicker ginger are going to be made and so the quicker it'll be oversubscribed onto the market. before planting the seed rhizomes, farmers are needed to treat the seeds to stop seed-borne pathogens and pests, rootstock Rot and alternative seed-borne diseases. There are numerous ways in which farmers do seed Treatment in Bharat

These include dipping the seeds in cow dung emulsion, smoking The seeds before storage, or hot water treatment Once the seeds are properly treated, the farmland in which they are to be planted must be thoroughly dug or ploughed by The farmer to break up the soil. After the soil is sufficiently ploughed (at least 3-5 Times), water channels are made 60–80 ft apart to irrigate the crop.

The next step is planting the stalk seed. In India, planting the irrigated ginger crop is sometimes drained the months between March and Gregorian calendar month as those months account for the start of the monsoon, or time of year. Once the planting stage is finished, farmers continue to mulch the crop to conserve wet and check weed growth, in addition as check surface runoff to conserve soil. Mulching is finished by applying mulch (green leaves for example) to the plant beds directly when planting and once more forty five and 90 days into growth. when mulching comes hilling, that is that the stirring and ending of soil to envision weed growth, break the firmness

In India, farmers should irrigate their ginger crops each time period at the smallest amount between Gregorian calendar month and Gregorian calendar month (when the monsoon is over) to make sure most yield and top quality product

The final farming stage for ginger is that the harvest home stage and for things like Vegetable, soda, and candy, harvest home ought to be done between four and 5 months Of planting, whereas once the stalk is planted for product like dried ginger Or ginger oil, harvest home should be done eight to 10 months when planting.

Physical Characteristic:

Appearance. Fresh ginger root is typically light brown on the outside and pale yellow on the inside and are in irregular shape Dried ground ginger has a fine texture and is light tan in hue. Crystallized ginger is darker yellow to amber in hue.

Chemical Tests:

Suberin can be stained with fluoral yellow and checked with fluorescence. Starch can be stained by iodine and checked under the microscope. To identify adulterants of ginger in the form of capsicum and grains of paradise, the tincture of the ginger sample may be heated with caustic alkali at 90-100 °C.

Morphology of Ginger

Ginger is a perennial creeping plant, with thick tuberous rhizome, producing an erect stem 30-100cm (1-3 ft) tall. The lance-shaped leaves are bright green, 15 - 20 cm (6-8 in) long, with a prominent longitudinal rib, enclosing conical clusters of small yellow-green flowers marked with purple speckles

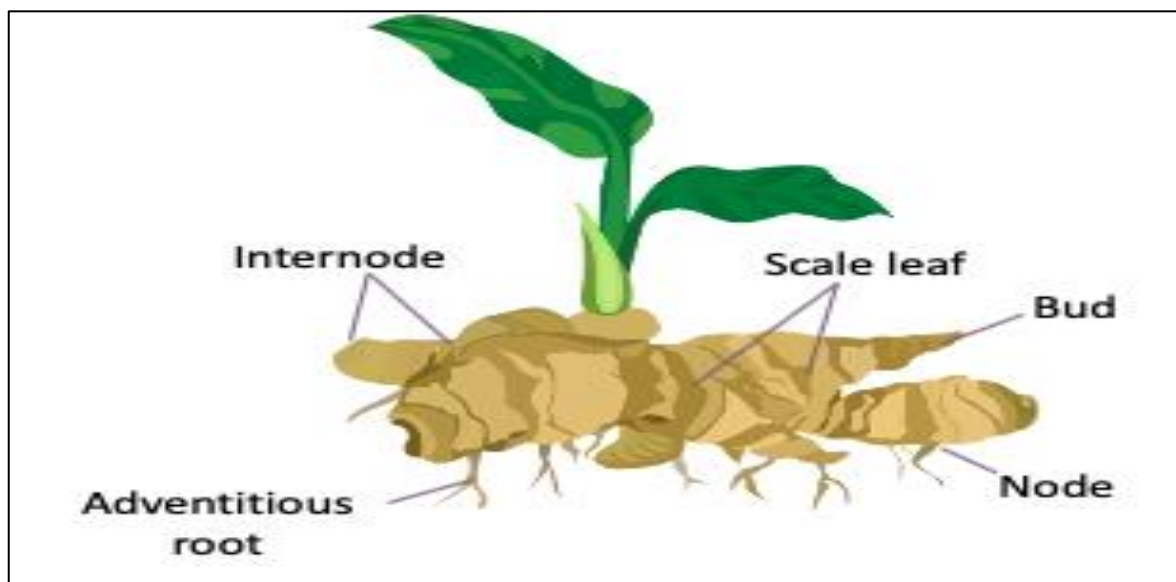


Fig 5. Morphology of Ginger

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4.Interactions:

Blood-thinning medications:

Ginger may increase the risk of bleeding. Talk to your doctor before taking ginger if you take blood thinners, such as warfarin (Coumadin), clopidogrel (Plavix), or aspirin.

Diabetes medications:

Ginger may lower blood sugar. That can raise the risk of developing hypoglycemia or low blood sugar.

High blood pressure medications:

Ginger may lower blood pressure, raising the risk of low blood pressure or irregular heartbeat.

Medicinal Uses of Ginger:

- *Anti-inflammatory*
- *Circulatory stimulatory*
- *May reduce cholesterol*
- *Expectorant for Treatment of asthma*
- *Antipyretic*

■ *Analgesic*

■ *Anti viral*

■ *Treatment of HTN*

■ *Anti-tumor • Anti-diabetic*

Ginger is used as a stomachic, an aromatic, a carminative, stimulant and flavouring agent. Ginger oil is used in mouth washes, ginger beverages and liquors. Ginger powder has been reported to be effective in motion sickness. It has been suggested that adsorbent, aromatic and carminative properties of ginger on G. I. tract cause adsorption of toxins and acid enhanced gastric motility. These may have probably blocking effects of G. I. reactions and nausea. *Z officinale* (Methanolic extract has molluscicidal effects, possessing efficacy to control the parasitic infection viz, schistosomiasis. U.S. Food and Drug administration has included ginger as product that is generally regarded as safe (GRAS).

Ginger has been used in alternative medicine as a possibly effective aid in treating nausea and vomiting after surgery, dizziness, menstrual pain, arthritis, preventing morning sickness. Ginger has also been used for weight loss and to prevent motion sickness and seasickness. However, research has shown that ginger may not be

effective in treating these conditions. Other uses not proven with research have included sudden respiratory failure, alcohol hangover, nausea and vomiting due to chemotherapy, upset stomach, high cholesterol, migraines, muscle pains after exercise, rheumatoid arthritis, trouble swallowing, loss of appetite, colds, and other conditions. It is not certain whether ginger is effective in treating any medical condition. Medicinal use of this product has not been approved by the FDA. Ginger should not be used in place of medication prescribed for you by your doctor. Ginger is often sold as an herbal supplement. There are no regulated manufacturing standards in place for many herbal compounds and some marketed supplements have been found to be contaminated with toxic metals or other drugs. Herbal/health supplements should be purchased from a reliable source to minimize the risk of contamination.

Anti-ulcer activity

In a previous study, ginger and 6-gingerol stifled experimental stomachal ulcers in rats (Yamahara, 1988; AlYahya, 1989). Contemporary ginger decocted in water resulted in symptomatic improvement in ten patients with biological process ulcers (Chang, 1987).

Anti-inflammatory activity

Ginger extract inhibited carrageenan-induced paw swelling and was as active as aspirin (Schauenberg and Paris, 1977). Essential oil of ginger inhibited chronic adjuvant arthritis in rats (Connell and Sutherland, 1969). Ginger and its pungent components are dual inhibitors of arachidonic acid metabolism; that is, they inhibit both cyclooxygenase (prostaglandin synthetase) and lipoxygenase enzymes of the prostaglandin and leukotriene biosynthetic pathways (Mascolo et al., 1989; Flynn, 1986; Farnsworth, 1992).

Cardiovascular effects

Ginger exerted a strong positive inotropic result on isolated guinea pigs left atria (Connell, 1970). Gingerols were known because the active parts (Shoji, 1982; Kobayashi, 1988).

Antioxidant activity

Extracts of ginger have pronounced inhibitor activity antioxidant that of artificial inhibitor preservatives

Pharmacology Activities:

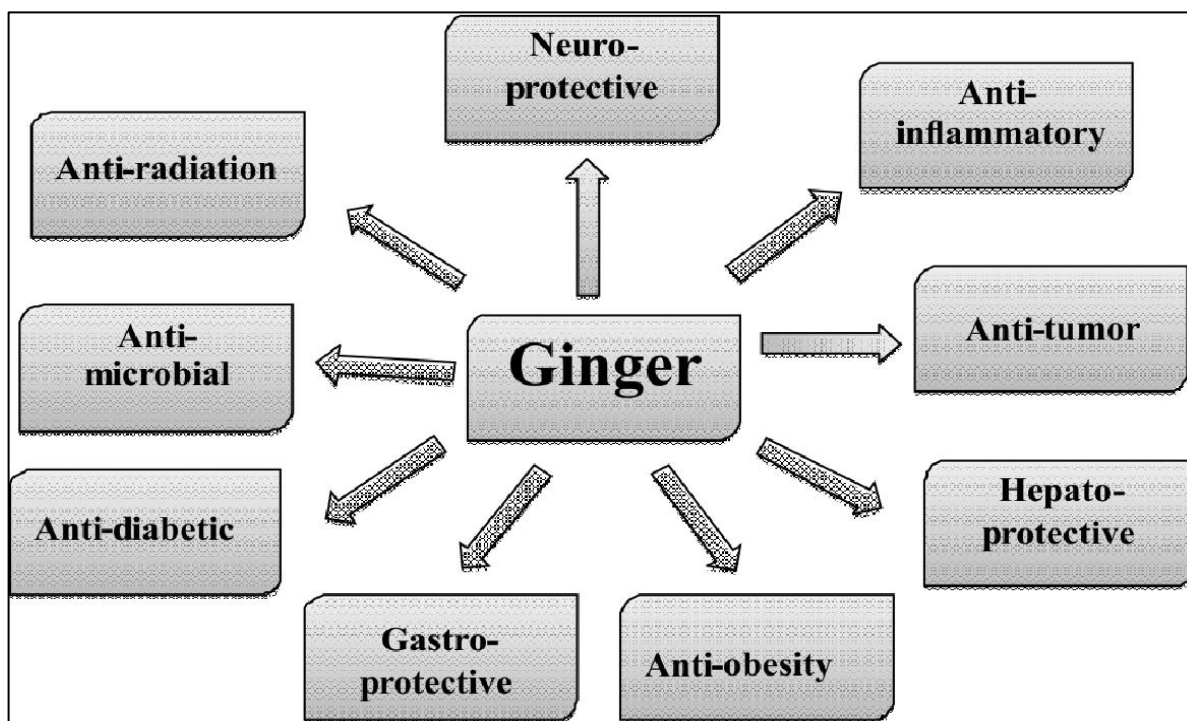


Fig 6. Pharmacological Activities

Antioxidant:

The overproduction of free radicals (ROS) in situation where the antioxidant defense mechanism is compromised results into a state of oxidative stress. In order to overcome the excessive free radical (FR) generation and oxidative stress, antioxidants play an important role

5. Conclusion:

The world is filled with enormous diseases causing major setbacks to the health status of humanity. Unfortunately, the synthetic moieties adopted for therapeutic and preventive measures are not helping (at all) as they are characterized with side effects. Medicinal plants such as ginger are now being embraced as the alternative options for combating various simple or lifethreatening ailments. Since various efforts had established the effectiveness of ginger and its corresponding derivatives on a number of ill-health (though lacking clinical reports), there is

much hope in the future that ginger might be able to rescue humankind from these evolving derangements causing setbacks to their living and/or survival

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