



## A Overview on the Therapeutic Properties of Ginger

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### ABSTRACT

*Zingiber officinale* commonly called ginger is a very common used herb and is a flavouring agent too in the food industry. It belongs to Zingiberaceae family which comprises of about 1200 of species in the 53 genera. Historically, ginger is mainly domesticated in Southeast Asia and is harvested in several countries which also include India. Ginger is a very common condiment for different types of beverages and foods. The most common use of the ginger is that it is a well proved cough remedy. It is basically popular for its several medicinal properties and its use in the traditional medicinal field which helps in treating different type of illness such as vomiting, asthma, nausea, cough, inflammation, palpitation, dyspepsia, and constipation, loss of appetite, pain and indigestion. In the last few years, ginger is substantial studied for its medicinal properties with the help of various advanced and scientific techniques. For a wide variety of the bioactive compounds that has been remoted from the various parts of the *Zingiber officinale* and were pharmacologically analysed. The nutritional and medicinal properties of ginger plant make it a beneficial and are rich in many medicinal compounds. Hence ginger is announced for its antimicrobial activity, anti-diabetic activity, analgesic activity, anti-inflammatory activity, hypolipidaemic activity and many more.

**Key words:** Ginger, Antimicrobial activity, Anti-diabetic activity, Analgesic activity, Anti-inflammatory activity.

### INTRODUCTION

Plants and herbs are rich in therapeutic compounds that are used in medicinal system since the many years. Medicinal plants play a very important role in the international pharmaceutical and herbal markets and also have traditional uses in the health care systems. The medicinal importance of different herbs and plants are in the form of

different chemical constituents that has a specific physical action on the body of human. Tannins, alkaloids, flavonoids and phenolic compounds are some of the foremost bioactive compounds of plants<sup>8,18</sup>.

*Zingiber officinale* or ginger can be defined as a crawling perennial on a wide tuberous rhizome that spreads underground.

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It is one of the major plants along with various nutritional ethno medicinal values hence can be used globally as an herbal remedy, spice and flavouring agent. Historically, the ginger rhizome is inherent to Southeast Asia. It is also harvested in several countries which also include India and is helpful to protect from different types of diseases like vomiting, nausea, cough, asthma, inflammation, palpitation, dyspepsia, constipation, loss of appetite, pain and indigestion<sup>12</sup>. It is also useful in treating the morning illness during pregnancy. It also helps in treating the ulcer and prevent the risk of stroke and heart attack. The taste and odour of ginger are aromatic, pungent and characteristic and typical. In the last few years, ginger is substantial studied for its various medicinal properties with the help of various advanced and scientific techniques. It is also used for different bioactive compounds that has been remoted from the various parts of the rhizome and were pharmacologically analysed. The dried roots of the herb are the therapeutic part. Ginger was described for anticancer activity, antimicrobial activity, anti-diabetic activity, analgesic activity, antioxidant action, anti-inflammatory

activity, immune-modulatory activity, larvicidal activity, nephroprotective activity, hepatoprotective activity and many more<sup>1,2,3,5,7,15,17,19,10</sup>.

## 2. Traditional Medicinal Uses of Ginger-

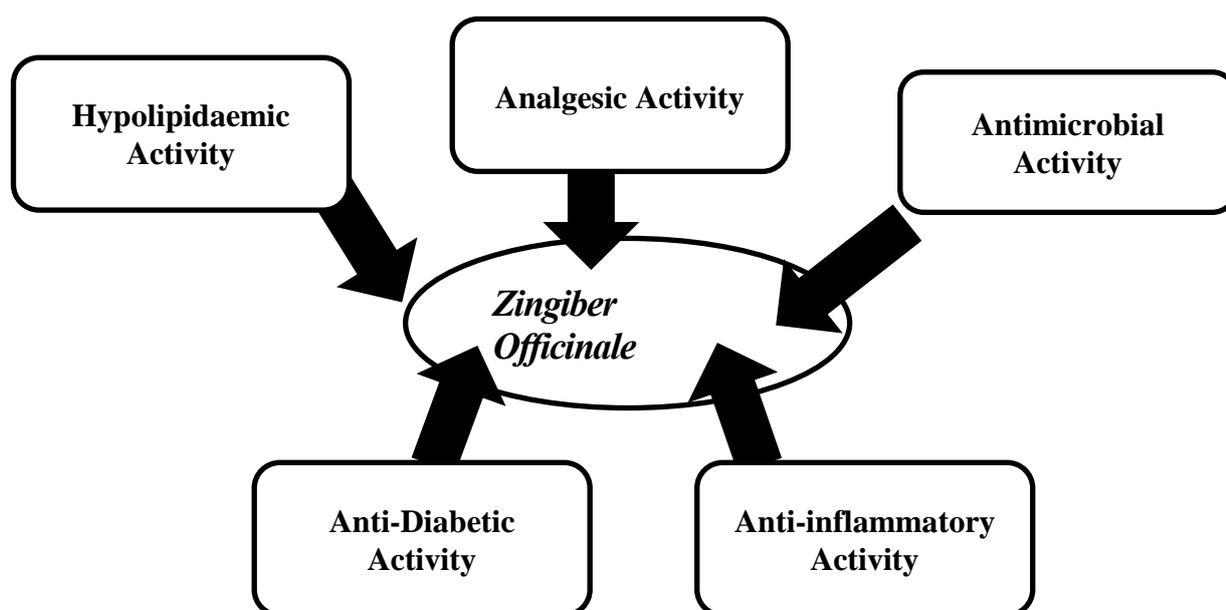
### 2.1 Uses of Ginger in Ayurveda-

Ginger had a vital role in Ayurveda to treat or to prevent different type of diseases like flavourlessness, dyspepsia, flatulence, loss of appetite, nausea, allergic reactions, vomiting, chronic and acute cough, fever, cold, allergic rhinitis, sinusitis, chronic and acute bronchitis, respiratory problems, headache and backache or muscular pain, problems related to tooth and gums<sup>11,14,23</sup>.

### 2.2 Uses of Ginger in Siddha-

Ginger has various major medicinal properties which had a vital role in Siddha for treating the cough, pain, nausea and diarrhoea. Additionally, it can also be used for the treatment of vomiting, indigestion, gastritis, tastelessness, loss of appetite, headache, dyspepsia, cough, back and abdominal pain, sinusitis, hepatomegaly, gingivitis, pharyngitis, toxic fever, peptic ulcer and dysmenorrhoea<sup>24</sup>.

## 3. Medicinal Properties of Ginger-



### 3.1 Anti-Diabetic Activity of Ginger-

The ginger rhizome had a vital role in the treatment or prevention of diabetes in

traditional medicinal uses. Many scientific researchers studied on the animals to assess the anti-diabetic action of juice of the plant

and various organic extracts. The hypoglycaemic activity of the rhizome was appeared in streptozotocin incorporated in rats having diabetes. It was incorporated with a liquid extract of Ginger for 7 weeks which brought a remarkable decrement in cholesterol level, triacylglycerol and glucose level in serum in diabetic rats which were treated in comparison to controlled rats having diabetes rats<sup>4</sup>. Hence, the liquid of the plant was appeared to possess hyperglycaemic action. The fresh extract of ginger caused a remarkable time reliant decrement in the sugar level in blood amount in streptozotocin incorporated diabetic rats<sup>6</sup>. Hence it was reported that fresh extract of ginger can be proved useful to maintain or prevent I type of diabetes. Treatment with its liquid in streptozotocin incorporated type I diabetic mice reported in a remarkable increment in the blood insulin level and a decrement in the sugar level in rats affected with diabetes. It also causes decrement in the cholesterol level, blood pressure and serum triglyceride in the rats affected with diabetes<sup>3</sup>.

### 3.2 Antimicrobial Activity of Ginger-

Ginger has a quite long establishment for treating the infections of throat and is considered as a major plant in hindering different types of pathogenic microbes including gram negative and positive bacteria along with fungi. Several researches demonstrated antimicrobial action of ginger extracts regarding both the gram negative and positive bacteria. Antimicrobial action of several biological extracts like n-hexane, ethyl ethanoate, and ethyl alcohol and H<sub>2</sub>O of the ginger was appeared for Streptococcus viridians, Coliform bacillus and Staphylococcus epidermidis. Recent research reported that all the extract excluding the water extract possess antibacterial action and inhibit growth of bacteria. As compared to all the extracts ethyl alcohol was having highest antimicrobial potential<sup>16</sup>. Antibacterial action of several organic extracts of *Zingiber officinale* either alone or in addition with honey (ethanol extract and honey, methanol extract and honey, extracts of methanol and

ethanol, ethanol extract and honey) has been assessed. All the above mentioned five concentration possessed antimicrobial potential for the Staphylococcus aureus, Salmonella typhi, Escherichia coli, Klebsiella pneumonia, Pseudomonas aeruginosa and Bacillus cereus. Although, the blend of extracts and honey was regarded to have high antimicrobial activity in comparison to that of individuals<sup>17</sup>. The antifungal potential of ethanolic extract of the plant is for PTCC 5027 and ATCC 10231 which are the strains of Candida albicans.

### 3.3 Anti-inflammatory Activity of Ginger-

Anti-inflammatory potential of ginger extract was analysed in rats which were incorporated with carrageenan. The extract of rhizome brings a remarkable decrement in carrageenan – incorporated rat paw oedema in rats<sup>19</sup>. In a different study a compound called eugenol in the oil of ginger was reported have anti-inflammatory activity. Oral ingestion of eugenol which is a main constituent of ginger oil & clove oil was incorporated verbally in mice with arthritis in knee and paw. The rhizome oil was incorporated for a period of 26 days and it causes a remarkable reduction of the joint and paw swelling. Hence it was concluded that ginger oil and eugenol possess anti-inflammatory properties<sup>20</sup>.

### 3.4 Analgesic Activity of Ginger-

The analgesic potential of oil produced from ginger was assessed by acetic acid incorporated squirming movements in mice. In the study it was noticed that the ginger oil show remarkable analgesic effect for the thermally and chemically incorporated nociceptive aching stimuli in rats<sup>22</sup>. Analgesic potential of ginger extract was described in acetic acid incorporated squirming movements in the mice. The extract of ginger rhizome considerably brought decrement in the squirming movements in rats which were incorporated by acetic acid<sup>19</sup>.

### 3.5 Hypolipidaemic Activity of Ginger-

Many researchers also bring out the cholesterol reducing effects of *Zingiber officinale*<sup>13,21</sup>. The influence of ethanolic produce of ginger was studied in the rabbits

that were fed with high level of cholesterol. It showed a remarkable increment in the cholesterol level, tissue cholesterol, serum triglycerides, serum phospholipids and lipoproteins following the cholesterol feeding for 10 weeks and then it was decreased by ethanol produce of the plant then result was compared with a hypolipidaemic drug which was orally effective and known as Gemfibrozil. The severeness of the atherosclerotic cardiovascular disease as determined through gross grading marked high in pathogenic that is hypo-cholesterolemic group, while the animals which received the ginger extract with the cholesterol reported a reduction in atherosclerosis. Hence, it was reported that ginger is surely an anti-hyperlipidaemia agent<sup>9</sup>.

### CONCLUSION

Medicinal plants and herbs are the derivatives of various herbal and synthetic drugs. They possess a huge variety of biochemical substances that are commonly called as phytochemicals. In the last decades, the medicinal study on the plant origin gained much attention as it lighten up the various known and unknown medicinal or pharmacological properties of plants. Ginger is a well-known and hot herb and many researchers worked on it to show that it can be a useful medicinal agent and is extensively used in Siddha, Ayurveda, and Chinese medicine etc. It has antiemetic and anti-inflammatory properties. Ginger herb possesses a major constituent known as Gingerol, also has been studied and isolated for toxic and pharmacological effects. Pharmacologists are viewing forward to produce different kinds of modern drugs using ginger plant that can be proved helpful for treating different types of diseases.

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