



IJPPR

INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals

ISSN 2349-7203




Human Journals

Review Article

November 2019 Vol.:16, Issue:4


© All rights are reserved by Arshi Khanam et al.

Review on *Zingiber officinales*



IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals

ISSN 2349-7203



Tripti Pradhan¹, Arshi Khanam^{*2}, Ravina Yadav³

*Faculty of Pharmaceutical Sciences Jayoti Vidhyapeeth
Women's University, India*

Submission: 21 October 2019
Accepted: 27 October 2019
Published: 30 November 2019

Keywords: *Zingiber officinales*, Spice and medicinal plants, Ginger

ABSTRACT

Spice and medicinal plants gained an important role in agronomy production, pharmacy and exportation because of their increased use as a raw material for the pharmaceutical industry and in everyday life. Ginger, the rhizome of *Zingiber officinale*, species of the ginger family (Zingiberaceae) has a long history of medicinal use for more than 2000 years as one of the most versatile medicinal plants having a wide spectrum of biological activity.



HUMAN JOURNALS

www.ijppr.humanjournals.com

INTRODUCTION

Nature has been a source of medicinal agents for thousands of years and impressive number of modern drugs have been isolated from natural sources that plays a vital role in treatment of diseases [1]. Traditional knowledge of medicinal plants has always explored the search for new cures. Traditional medicinal plants are often cheaper, locally available and easily consumable, raw or as simple medicinal preparations. Medicinal plants are generally known as “Chemical Goldmines” as they contain natural chemicals, which are acceptable to human and animal systems. Ginger scientifically known as *Zingiber officinale* Roscoe, belonging to family Zingiberaceae. It is one of the most important plant with several medicinal, nutritional and ethnomedical values therefore, used extensively.

Worldwide as a spice, flavouring agent and herbal remedy. Traditionally, *Z. officinale* is used in Ayurveda, Siddha, Chinese, Arabian, Africans, Caribbean and many other medicinal systems to cure a variety of diseases, viz., nausea, vomiting, asthma, cough, palpitation, inflammation, dyspepsia, loss of appetite, constipation, indigestion and pain.

Taxonomic position

The family Zingiberaceae is the largest family of Zingiberales and is one of the ten largest monocotyledonous families in India. It occurs chiefly in the tropics with about 52 genera and 1400 species with the greatest concentration in the Indo- Malayan region of Asia and represented by 22 genera and 178 species in India. Many important biological properties (antimicrobial, antioxidant, anticancer, and a stimulated effect on the immune system) of Zingiberaceae extracts containing many essential oils like terpenes, alcohols, ketones, flavanoids, carotenoids, gingeroles, and phytoestrogens.

Kingdom	Plantae
DIVISION	Magnoliophyta
CLASS	Liliopsida
ODER	Zingiberales
FAMILY	Zingiberaceae
GENUS	Zingiber
SPICES	<i>Z. officinale</i>



Description

Ginger is herbaceous rhizomatous perennial, reaching up to 90 cm in height under cultivation. Rhizomes are aromatic, thick lobed, pale yellowish, bearing simple oblong leaves. The herb develops several lateral shoots in clumps, which begin to dry when the plant matures. Leaves are long and 2 - 3 cm broad with sheathing bases, the blade gradually tapering to a point. Inflorescence solitary. For successful cultivation, ginger requires a moderate rainfall at the sowing time till the rhizomes sprout, fairly heavy and well distributed showers during the growing period and dry weather for about a month before harvesting. Ginger thrives the best in well drained soils like sandy or clay loam, red loam or lateritic loam.

Table No. 1: Top ten ginger producing states in India

S. No.	STATES	PRODUCTION (TONNES)
1	ASSAM	122307
2	GUJRAT	70646
3	KARNATAKA	50054.3
4	ARUNACHAL PRADESH	57000
5	MEGHALAYA	62994
6	SIKKIM	52110
7	ORRISA	35000
8	MIZORAM	28390
9	WEST BENGAL	25000
10	UTTRAKHAND	23440
11	KERALA	2124
12	ANDHRA PRADESH	1369
13	TELANGANA	12729

Agrotechnology

Ginger grows in warm and humid climate.

Varieties of ginger

Several hybrid varieties of ginger are grown in South Asian region. However, the cultivators depends upon the climate, soil and local conditions.

Table No. 2: varieties of ginger

Country	Varieties
India	Varda, mahima, rejhata, suruchi, suprakha, himachal, maran, karakkal, pink ginger, bhaise.
China	China ginger
Nepal	Navalparasi, bakthapur
Japan	Kintoki
Nigeria	Juggigan
Jamaica	Jamacia
Pakistan	Pakistan
Oman	Oman
Brazil	brazil

Nutrient Composition

Ginger is widely used in a variety of foods because of its nutritional composition and flavouring compounds. Ginger rhizomes are rich source of carbohydrates, vitamins, minerals and iron. The different vitamins, minerals and phytochemicals content in present in ginger rhizomes.

Table No. 3: nutrients content of ginger (per 100gm 3.5 oz)

NUTRIENTS	GINGER ROOT (GROUNDED)	GINGER ROOT (RAW)
Energy	1404KJ	333KJ
Carbohydrates	71.6gm	17.7gm
Sugars	3.39gm	1.7gm
Dietary fibers	1.41gm	2.0gm
Fat	4.24gm	0.75gm
proteins	8.98gm	1.82gm

Table No. 4: Vitamin content of ginger (per 100 gm)

Vitamins	Ginger root (ground)	Ginger root (raw)
Vitamin B1	0.046mg	0.025mg
Vitamin B2	0.17mg	0.035mg
Vitamin B3	9.62mg	0.75mg
Vitamin B5	0.477mg	0.203mg
Vitamin B6	0.626mg	0.16mg
Vitamin B9	13µg	11µg
Vitamin C	0.7mg	5mg
Vitamin E	0.0	0.26mg

Table No. 5: Mineral content of ginger (per 100gm)

MINERALS	GINGER ROOT (GROUND)	GINGER ROOT (RAW)
Calcium	114mg	16mg
Iron	19.8mg	0.6mg
Magnesium	214mg	43mg
Manganese	33.3mg	0.229mg
Phosphorus	168mg	34mg
Potassium	1320mg	415mg
Sodium	27mg	13mg
zinc	3.64mg	0.34mg

CHEMICAL COMPOSITION

Phytochemical studies show that ginger rhizome contains a wide variety of biologically active compounds which impart medicinal property. *Z. officinale* is reported to possess essential oils, phenolic compounds, flavonoids, carbohydrates, proteins, alkaloids, glycosides, saponins, steroids, terpenoids and tannin as the major phytochemical groups. The chemistry of *Z. officinale* has been the subject of sporadic study since the early 19th century. The aroma and flavour of ginger are determined by the composition of its steam volatile oil, which is comprised mainly of sesquiterpene hydrocarbons, monoterpene hydrocarbons and oxygenated monoterpenes. The monoterpene constituents are believed to be the most important contributors to the aroma of ginger and they tend to be relatively more abundant in the natural oil of the fresh ('green') rhizome than in the essential oil distilled from dried ginger. The species contains biologically active constituents including the non-volatile pungent principles, such as the gingerols, shogaols, paradols and zingerone that produce a 'hot' sensation in the mouth. The gingerols, a series of chemical homologs differentiated by the length of their unbranched alkyl chains, were identified as the major active components

in the fresh rhizome. The pungency of dry ginger mainly results from shogaols, which are dehydrated forms of gingerols. Gingerols are thermally labile because of the presence of a β -hydroxy keto group and readily undergo dehydration to form the corresponding shogaols. Paradol is similar to gingerol and is formed on hydrogenation of shogoal. Oleoresin, which is isolated by acetone and ethanol extraction, contains 4-7.5% of dried powder, pungent substances namely gingerol, shogaol, zingerone and paradol.

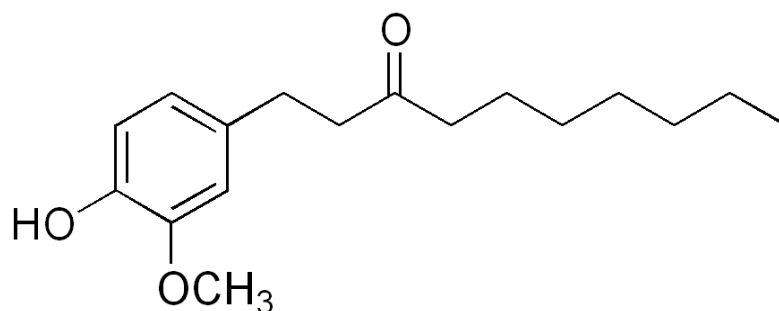


Figure No. 1: Gingerol

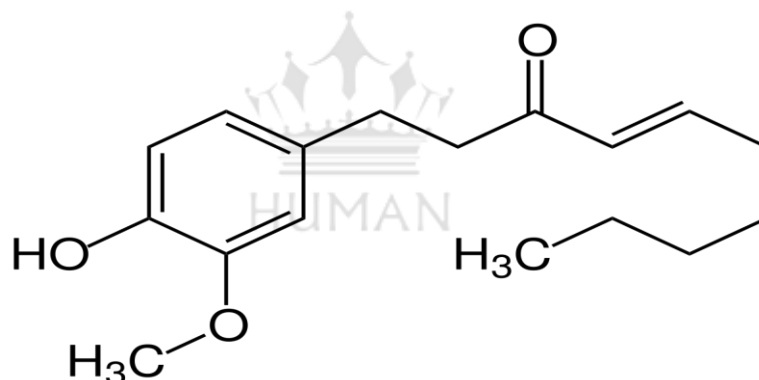


Figure No. 2: Shagoal

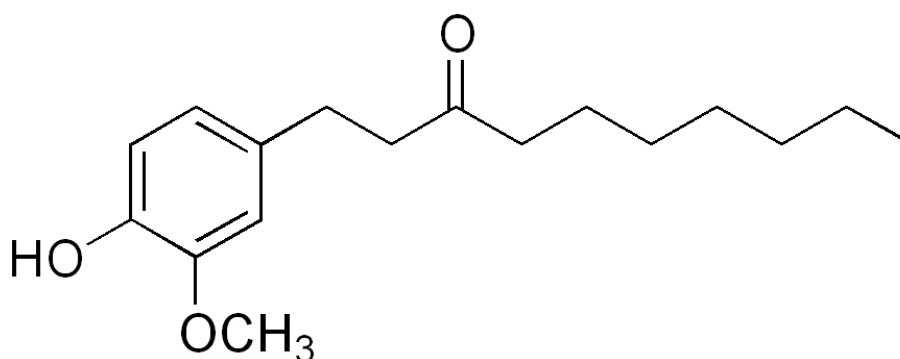


Figure No. 3: Paradol

PROPERTIES OF ZINGERBER OFFICINALE

➤ **Anti-diabetic activity**

Z. officinale is used to control diabetes in traditional medicinal system.

➤ **Nephroprotective activity**

The nephroprotective activity of the ethanol extract of *Z. officinale* was reported in mice. The combination of *Z. officinale* (250 mg/kg) with a-tocopherol (250 mg/kg) showed a better protection compared to their 250 mg/kg alone treated groups.

➤ **Hepatoprotective activity**

Injection of CCI followed by the ethanolic ginger extract gives a reduction in the serum enzymes but not as such as when ginger extract was first administrated.

➤ **Anticancer activity**

Ethanol and chloroform extracts of *Z. officinalis* were screened for their cytotoxic activity against human cervical cancer (Hela) and Mouse fibroblast cell lines.

➤ **Analgesic activity**

The analgesic activity of the *Z. officinale* oil was evaluated by the Acetic acid include writhing in mice and hot-plate test in mice. The study reported the Analgesic activity.

➤ **Anti-inflammatory activity**

The rhizome extract (50 and 100 mg/kg body weight) significantly reduced the carrageenan-induced rat paw oedema in rats.

➤ **Antioxidant activity**

Antioxidant activity of the plants is due to the presence of flavones, isoflavones, flavonoids, anthocyanin, coumarin lignans, catechins and isocatechins. *Z. officinale* is extensively reported to possess antioxidant activity against a variety of free radicals.

REFERENCES

1. A Review on Pharmacological and Phytochemical Properties of *Zingiber officinale* Roscoe (Zingiberaceae)
Gaurav Kumar, Bhaskar Rao.
2. www.jproline.info
3. A Review on *Zingiber officinale* Jyotsna Dhanik, Neelam Arya and Viveka Nand
4. www.wikipedia.com
5. Natural herbal living magazine.
6. Thomas J. Medicinal and aromatic plants research in India. In UNDP. 1997. Proc. Training course on Industrial Exploitation of Indigenous Medicinal and Aromatic Plants. Beijing, China. 1997; 17-27.

