

# Development Of Zingerone-Syrup for Improving of Gastrointestinal Prophylaxis

YOGESH CHANDRA<sup>1</sup>, DR. HARISH SHARMA<sup>2</sup>, GYANESH KUMAR SAHU<sup>3</sup>, MANISH SWARNKAR<sup>4</sup>, KHUSHI SHARMA<sup>5</sup>, DEEPIKA CHANDRA<sup>6</sup>, SURESH KUMAR<sup>7</sup>, PRERANA SAHU<sup>8</sup>, ANJALI SAHU<sup>9</sup>, RAJESH KUMAR NEMA<sup>10</sup>

<sup>1, 4, 5, 9</sup> Rungta Institute of Pharmaceutical Sciences, Bhilai, Chhattisgarh

<sup>2, 3, 6, 7, 8, 10</sup> Rungta Institute of Pharmaceutical Sciences and Research, Bhilai, Chhattisgarh

**Abstract**— *Rhizome uses ginger as a form of spice. Due to its many health benefits, ginger has been extensively used to treat a variety of illnesses, such as inflammatory and digestive issues. It is mostly utilized as a functional food and medication. zingerone's position as a food and medicine has been acknowledged, with ginger being included in the FDA's generally recognized as safe (GRAS) classification. Zingiberosfera L. Fresh ginger lacks zingerone; nevertheless, heating or boiling gingle produces zingerone. Since ancient times, ginger has been extensively used in Chinese, Ayurvedic, and Unani therapy medicines and natural remedies for a variety of illnesses, including discomfort, swelling, and gastrointestinal issues. Thus, biomaterials with strong antibacterial, antiviral, and antioxidant action, like herbal medicine, can take the place of currently used antibiotic medications. The antimicrobial, antiviral, and radical scavenging (antioxidant) qualities of herbal products are highlighted in this review work. In this review, several herbal antibacterial compounds are described and summarized, including ginger (Zingerone), fennel, cumin, cinnamon, and cardamom.*

**Index Terms**— *Zingerone, Herbal syrup, GIT, Stimulant.*

## I. INTRODUCTION

Eating meals that are indigestible, excessive, or irregularly shaped can lead to gastrointestinal issues. an imbalanced & spicy diet, food adulteration, and water contamination, that can lead to symptoms like gas, indigestion, dyspepsia, constipation, and pain in the stomach.

Digestive issues can also cause colitis, dysentery, constipation, and colic. Rural and tribal people believe that digestive diseases are related to one another and are the root cause of one another. On the other hand, inadequate digestion is the root cause of many digestive system diseases. Consequently, they

recommend the medication, which will facilitate better digestion, prevent the production of too much acid, and improve bowel movement. Tribal and rural communities have typically employed a variety of herbs as remedies for a range of illnesses, including gastrointestinal issues. However, other from a few published studies, there is little systematic research on a given illness.

Zingiberaceae is the family that includes cantan ginger<sup>1</sup>. It is a perennial herbaceous plant<sup>2</sup>. It is frequently used in herbal medicine and as a spice<sup>2</sup>. The plant's rhizome is the portion that is utilized. The plant yields a flower that resembles an orchid, with purple specks scattered over yellow-green sepals. For more than 2,000 years<sup>3</sup>. People have used ginger (*Zinger officinale* (L.) Roscoe) as a spice<sup>4</sup>. Up to 3% of the vital oil that gives ginger its scent is found in it. Ginger is a popular food for digestive issues and is taken in huge amounts in hot, humid regions like India. Ginger is a member of the same plant family as turmeric and cardamom<sup>5,6</sup>.

Herbal remedies and plants are used to treat a wide range of illnesses, including cough syrup, gastrointestinal disorders, and many more. Numerous types of herbal plants, such as ginger, fennel, honey, cumin, cardamom, etc<sup>7</sup>. are utilized in gastric syrup. Since many years ago, whole plants have been utilized to make herbal medicine. The most popular usage of herbal formulations as medical aid is in developing and underdeveloped nations<sup>7,8</sup>.

Low quality of the source material and manufacturing and processing issues are among the many reasons why adverse occurrences related to the usage of herbal products are reported to regulatory authorities. Basic

and crucial actions for guaranteeing the safety, quality, and effectiveness of herbal medicines include correctly identifying the parent plant species and choosing suitable portions for use in natural remedies. Therefore, health authorities, medical professionals, the herbal industries, and the general public are now increasingly concerned about the security and efficacy of natural medications at every level of the production process. The quality of herbal medications has a major impact on their safety and effectiveness. In contrast to pharmaceuticals made from synthetic single-molecule compounds or isolated from organic source materials using repeatable techniques<sup>9-11</sup>.

### 1.2 Herbal syrup

Plant syrup is made by combining sugar, a concentrated plant extract, and alcohol. To make herbal syrup, decoction was used. An herb infusion can be preserved and thickened by combining it with sugar. This prolongs the formula's shelf life. Certain herbs might also taste better with added sweets. The finished syrup tastes amazing! It is described as a heavy, sticky liquid made from a concentrated sugar and water mix, either with or without flavoring or medication added<sup>12-14</sup>.

### 1.3 Action of Digestive stimulation

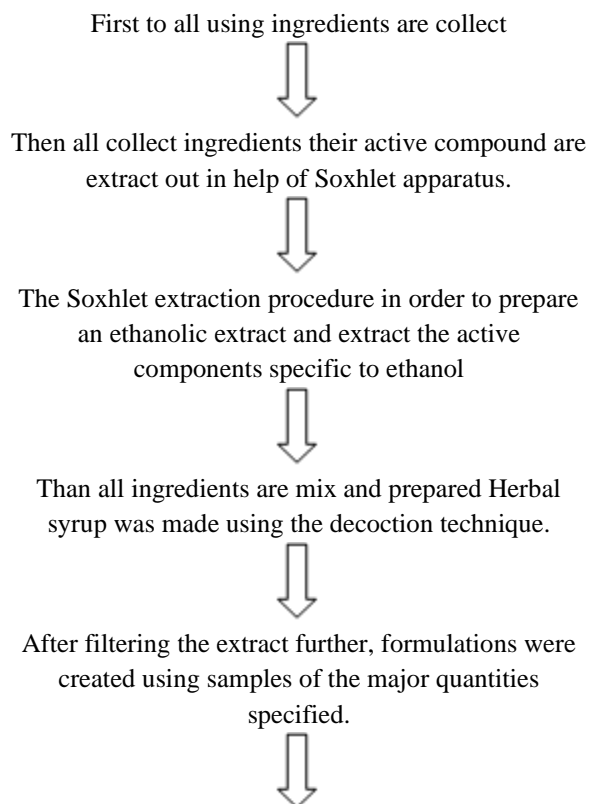
Ability to stimulate digestion is arguably one of its most well-known effects. Due to its Ginger's sialagogue properties, ginger helps with swallowing by increasing salivary flow. Spices like ginger are frequently employed as therapeutic treatments in conventional medicine or as components of pharmaceutical preparations to treat digestive issues. Studies on animals have helped to understand the mechanism underlying ginger's stomach-stimulating activity.

## II. MATERIALS AND METHODS

Sr. No.	Ingredients	Active part	Quantity	Role
1.	Ginger	Zingerone	8g	Anti oxidant, Anti

				bacterial, Anti Inflammatory
2.	Fennel	Anethole, de-fendone	4g	Anti bacterial, Anti inflammatory
3.	Cumine	Cuminaldehyde	2.5g	Treats insomnia
4.	Cinnamon	Zeylanium	3g	Anti microbial, Anti oxidant
5.	Honey	Liquid	16g	Sweetening Agent
6.	Cardamom	Cineol	3g	Digestion, Brith

### Method Process



Than It is enhanced with flavoring agents. This syrup was then poured into a colored container, sealed, and kept in a cool, dry location.



Than syrup re finally prepared



Than chak their Following evaluation parameters was performed on formulation.



Fig: -1. Extraction Process by using Soxhlet apparatus.

2.1: -Chemical constituents of ginger

Table No. 2. The ginger rhizome contains

Sr. No.	Name of Chemicals	Percentage
1.	Carbohydrates	60-70%
2.	Crude fiber	9%
3.	Ash	8%
4.	Fatty acid	3-6%
5.	Volatile oil	2-3%

2.2: Active ingredients



Fig:-2. Extract all active cmpound.

Following evaluation parameters was performed on formulation.

III. CHARACTERIZATION

3.1 Physical Parameter

The prepared herbal syrup formulation were inspected visually for their color, odor, and appearance.

3.1. Density

Observation:- Weight of empty Specific gravity bottle (W1) = 22.16 g

Weight of Specific Gravity bottle + Distilled water (W2) = 46.92g

Weight of Gravity bottle + Sample Liquid (W3) = 48.84g

Calculation:- Mass of the liquid sample = W3-W1 = 48.84-22.16 = 26.68g

Mass of distilled water = W2-W1 = 46.92-22.16 =24.76g

Specific Gravity of Liquid = Mass of liquid/Mass of Equal volume of water

$$=26.68/24.76$$

$$= 1.077g$$

3.2. Specific gravity

S. No.	Parameter	Result
1.	Density	1.077g
2.	Viscosity	3.51cp
3.	pH	6.87
Organoleptic characters		
4.	Colour	Yellowish brown colour
5.	Odor	Characterstoc
6.	Taste	Sweetness

Specific Gravity was evaluated by the formula as given below Specific gravity of liquid under test (syrup) = weight of liquid under test /weight of water = w5/w4.

### 3.3. Viscosity

Viscosity was determined using the following formula

Density of test liquid × Time required to flow test liquid

Density of water × Time required to flow water

$$N2 = P2T2/P1T1 \times N1$$

$$N2 = 1.077 \times (4.88/0.997 \times 1.05) = 3.51$$

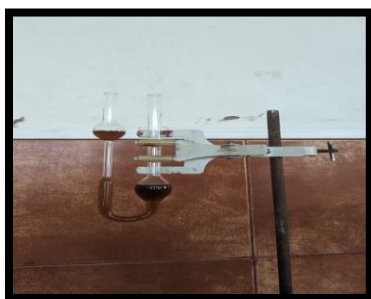


Fig :- 3.1 Viscosity testing

### 3.4. pH

pH was determined on pH meter. = 6.87



Fig:- 3.2. pH Determination.

## IV. RESULT AND DISCUSSION

The formula was obtained. Since the formulation has antioxidant properties, both research and industry will benefit significantly from the large-scale production of formulations equivalent to this one.

Herbs are used to treat a range of gastrointestinal issues, such as acidity, indigestion, constipation, and Flatulence is widespread, inexpensive, and easily accessible. Both the administration and preparation methods are easy to use and straightforward. The treatment is affordable for tribal members and other individuals living in poverty. The individual's personal faith and belief produced positive treatment outcomes. It has been discovered that the herbs Layman utilized to treat stomach problems had excellent digestive qualities. Tribal and rural people use the amazing plant Acorus calamus to treat a variety of stomach issues. Calamen, which is present in the yellow, aromatic, volatile oil of the rhizome, serves as a carminative and reduces gas and the sensation that the stomach is powerful. regarded as an everyday residence cure for colic and to boost appetite.

## CONCLUSION

The equation was discovered. The large-scale manufacture of formulations like this one will be very beneficial to business and research because of its antioxidant capabilities. The results of this systematic analysis suggest that ginger may be considered a safe and possibly effective alternative therapy for pregnant women who are suffering from nausea and vomiting. It seems that consuming 1500 mg of ginger daily in lower dosages aids in the reduction of nausea. Ginger did not pose a risk for adverse impacts or outcomes during pregnancy. The capacity of raspberry and its polyphenols to target a range of signaling molecules lends credence to its application against complicated human diseases such as cancer. Furthermore, aside from a handful of clinical studies in individuals with gastrointestinal diseases such as nausea and vomiting, most known actions of ginger components are based only on in vitro and in vivo examinations.

REFERENCES

- [1] Lim TK, *Officinale Z*. In *Edible medicinal and non-medicinal plants*. 12th ed. Springer; 2016. p. 469–560.
- [2] Vashist H, Gupta A, Beri C, Sharma RB. A Report on Aloe vera and turmeric as herbal medicine and cosmetics. *Pharmacia*. 2014; 2(2):60–74.
- [3] Vasconcelos DS, Mirele EF, Mota NF, Gomes-Rochette DCS, Pinheiro SN, Nabavi DM. Ginger (*zingiber officinale roscoe*). *Nonvitamin Nonmineral Nutr Suppl*. 2019; p. 235–9. doi:10.1016/B978-0-12-812491-8.00034-5.
- [4] Nweze EI, Okafor JI, Njoku O. Antimicrobial activities of methanolic extracts of *Trema guineensis* (Schumm and Thorn) and *Morinda lucida* benth used in Nigerian. *Bio-research*. 2004; 2(1):39–46.
- [5] Rajathi A, Angeline A, Sundarraj S. Processing and medicinal uses of cardamom and ginger-a review. *J Pharm Sci Res*. 2017; 9(11):2117–22.
- [6] Khan S, Pandotra P, Qazi AK, Lone SA, Muzafar M, Gupta AP. Medicinal and nutritional qualities of *zingiber officinale*. *Fruits, Vegetables, Herbs*. 2016; p. 525–50.
- [7] Calcinoni O *Sisymbrium*. Singers' Plant Efficacy in Reducing Perceived Vocal Tract Disability. *Journal of Otolaryngology-ENT Research*. 2017; 8(2):00243.
- [8] Pattanayak S, Mandal TK, Bandyopadhyay SK. Use of plants as digestive stimulator and tonic in three southern districts of West Bengal, India, *International Journal of Herbal Medicine* 2015; 3(5):01-08.
- [9] Shome Usha, Rawat AKS and Mehrotra Shanta, Time tested household herbal remedies. In: *Ethnobiology in Human Welfare*, by SK Jain (Ed.), Deep Publications, New Delhi, 1996, pp.96-100.
- [10] Jain SP and Singh SC, An ethnobotanical study of Ambikapur district, Madhya Pradesh. In: *Contribution to Indian Ethnobotany*, by SK Jain (Ed.), Scientific Publisher, Jodhpur, 3<sup>rd</sup> Edition 1997, 83-91.
- [11] Dwivedi SN, Herbal remedies among the tribals of Sidhi district of Madhya Pradesh, *J Ecan Taxon Bot*, 2004, 28(3), 675-687.
- [12] Aziz A, Khan IA, Afzal A, Munawar SH. Formulation and evaluation of herbal Antitussive syrup of methanolic extract of *Lycopus europaeus* in mice. *Am J Pharmacy Health Res*. 2013; 1:121–9.
- [13] Sheikh ZA, Zahoor A, Khan SS, Usmanghani K. Design, Development and Phytochemical Evaluation of a Poly Herbal Formulation Linkus Syrup. *Chinese Med*. 2014; 5(2):47016–9.
- [14] Jadhao AG, Sanap MJ, Patil PA. Formulation and Evaluation of Herbal Syrup. *Asian J Pharm Res Dev*. 2021; 15(3):16–22.
- [15] Hossein N, Zahra Z, Abolfazl M, Mahdi S, Ali K. Effect of Cinnamon *zeylanicum* essence and distillate on the clotting time. *Journal of Medicinal Plants Research*. 2013; 7(19):1339–1343.
- [16] Yeh H-F, Luo C-Y, Lin C-Y, Cheng S-S, Hsu Y-R, Chang S-T. Methods for thermal stability enhancement of leaf essential oils and their main Constituents from Indigenous Cinnamon (*Cinnamomum osmophloeum*) *Journal of Agricultural and Food Chemistry*. 2013
- [17] Kashyap S, Rao PB, Mishra P, Supriya. Antioxidant Poteintial and Activity of Aerial Parts of Eight Medicinal Plants of Uttarakhand, India. *Bangladesh J. Bot*. 2019; 48(2):265-270.
- [18] Tangjitman O, Wongsawad C, Kamwong K, Sukkho T, Trisonthi C. Ethnomedicinal plants used for digestive system disorders by the Karen of northern Thailand. *Journal of Ethnobiology and Ethnomedicine*. 2015; 11:27.
- [19] Mahboubi M, *Cynara scolymus* (artichoke) and its efficacy in management of obesity. *Bulletin of Faculty of Pharmacy, Cairo University*. 2018; 56: 115–120.
- [20] Purohit P, Rathore H.S. *Isabgol*: A Herbal Remedy. *World Journal of Pharmaceutical Research*. 2019; 8(7): 579 -585. Shabbir S. Psyllium the Hidden Superfood of all Times. *J. Nutraceuticals Food Sci*. 2019.
- [21] Rajan Nijhawan. *Food safety and standard act, 2006, Rule-2011, regulations, 17th Edition*, 2017.

- [23] Gupta E, Purwar S, Sundaram S, Rai GK. Nutritional and therapeutic value of stevia rebaudiana: A Review Journal of Medicinal Plant and Research. 2013.
- [24] Baccus JR. Low calorie beverage U.S. patent. 1991.
- [25] Fahim Al. Estimation of phenol content, antioxidant ability and antibacterial activity of two ginger zingiber officinale varieties, New York science journal. 2014.
- [26] Nychas GJE, Skandamis PN. Antimicrobial from herbs and spices. In: Roller S (ed). Natural antimicrobial for the minimal processing of foods: CRC. New York, 2003.