

**PREPARATION AND EVALUATION OF DRY GINGER CANDY AS LOZENGES BY USING NATURAL INGREDIENTS FOR COUGH COLD AND SINUS**

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**ABSTRACT**

The dry ginger candy comes to the category of lozenges Dry ginger has many advantages like anti-inflammatory and analgesic treats diarrhea, treats flatulence and prevents cancer etc., By using a dry ginger candy it can also prevents the health issues like cough, sinus and also intestine ulcers. By using this ginger candy regularly health conditions may get better and also helpful to improve immune system and also use combination natural ingredients to get the form of candy. It is also loved by children for its flavour which is sweet and spicy at the same time. Ginger is API in this product. The other ingredients which are used to formulate this Candy, jaggery, pepper, mint butter, turmeric, black salt these are all are used to improve the taste and action of ginger. The main action of ginger and its metabolites appear to accumulate the gastrointestinal tract and exert their effects by relieving pain through anti-inflammatory effects, soothing the digestive system through Carminative effect and alleviating nausea. Jaggery is a common ingredient in traditional remedy for cough and cold. It is used as sweetening agent in this candy. It improves the taste of the ginger by giving a sweet flavour and aroma. It is also helpful in reducing the irritation in throat during cold. Other ingredients like pepper, turmeric, salt and butter are used to improve the taste and action.

**KEYWORDS:** Ginger, Jaggery, Turmeric, Butter, black salt, Pepper and Mint.

**INTRODUCTION**

The main active pharmaceutical product (API) in this candy is Dry ginger. Dry ginger root is the rhizome of the plant zingiber officinale consumed as the delicacy, medicine or spice. It belongs to family zingiberaceae. Ginger cultivation begins in south asia and has spread to east Africa. Ginger has many medical values and advantages that may helpful in improving the health it has medicinal values like treating help our body fight off chronic diseases like high blood pressure, heart disease and diseases of lungs, plus promote healthy aging it is also used to treat nausea, colds, arthritis, migraines, and hypertension etc. ginger consists of antioxidants.

The jaggery is used to improve the taste of the candy. It is used as a sweetening agent and it has some medical uses such as improving bone health the main advantages of jaggery are rich in anti-oxidants, boosts digestive health, detoxifies the liver, provides an energy boost, relives menstrual pain, treats anemia & boosts immunity, and prevents respiratory problems etc.

Pepper has medicinal values like treat cancer, treat aid digestion, helps to treat diabetes, reducing inflammation, boosting brain function, helps to lose weight, it is used as anti-oxidant, used to maintain cholesterol levels, helpful in relieving pain, it ex foliate the skin improve the nutrient absorption, anti-bacterial properties, used to treat arthritis and asthma etc. the pepper is used in this candy for respiratory benefits and may help relieve congestion.

Turmeric is used as one of the ingredients in this candy it may helpful in this candy is because of the turmeric and ginger are rich in anti-oxidants and have immune boosting properties consuming them together can help strengthen our body natural defences by reducing the risk of infections and supporting overall immune function.

Clarified butter contributes to the candy's ability to coat the throat by creating a protective layer. This coating action helps elevate irritation and provides relief to a sore throat from the spicy taste of this candy cause due to dry ginger and pepper.

Black salt is helpful in improving the digestion and it is also good for diabetics.

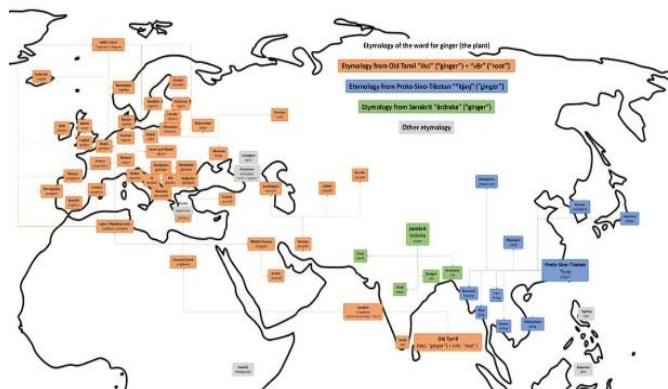
**ABOUT DRY GINGER**

The API in this candy is dry ginger so let us discuss some details about dry ginger.

**Etymology**

The word "ginger" comes from the Middle English "gingivere", derived from the Old English "gingifere". This is also from the medieval Latin "gingiber", which originated from the Greek "zingiberis".

The Greek word is derived from the Prakrit (Central Indian) word "Singbera", which can be traced back to the Sanskrit word "Sringerava".



**Origin**

Ginger is originated from Southeast Asia, particularly now in India and China. It has been used in these areas for thousands of years for cooking and medicine.

**Distribution**

Now a days Ginger is growing in tropical and subtropical regions are across the world. In the places like India, China, Indonesia, Nepal and Thailand. These are major producers across the world.

Country	Area (ha)	Production (tons)	Productivity (tons/ha)
India	105.50	517.8	4.9
China	24.50	279.0	11.3
Indonesia	18.20	159.0	8.7
Nepal	12.90	154.1	12.0
Nigeria	191.00	134.0	2.4
Bangladesh	7.70	49.4	6.4
Thailand	14.00	34.0	2.4
Philippines	3.90	27.2	6.9
Cameroon	1.30	7.5	5.7
USA	0.04	1.9	47.5
Rest of the World	8.20	71.5	8.7
World	387.30	1476.9	3.8

**Distribution across the world**

**History**

**Early Age Agriculture**

Ginger (*Zingiber officinale*) is originated at Southeast Asia, especially in India and China where it was first cultivated over 3000 years ago Originally, ginger was admired for its medicinal uses rather than its delicious properties. In ancient India and China books such as Ayurveda and Shenong Ben Cao Jing have documented the medicinal uses of ginger for treating diseases such as digestive problems, ulcers and arthritis, cough cold etc.

**Expanded along trade routes**

The popularity of ginger spread all over the world, for its shelf life and high demand. It travelled from west through the India to the Middle East where it became a valuable article in ancient Mesopotamia (region in Iraq) and the Persian Mediterranean region. Ginger was widely used as a spice and medicine in the Roman Empire in those days.

**Medieval and Renaissance Europe**

Ginger became popular in medieval and Renaissance Europe, where it was prized not only for eating purposes but also for its medicinal properties as a remedy for

digestive treatment and for making beverages such as ginger beer and for the taste of ginger ale. European travelers and traders further expanded its distribution around the world by bringing ginger to the America and Africans regions.

### Colonial Period and Modern Agriculture

European colonial efforts in the 16th century spread ginger production to the Caribbean islands and later to Central and South America. Jamaica in particular has become known for its quality ginger. Over time, cultivation techniques have improved, increasing yields and improving ginger varieties adapted to different climates and soil conditions.

### Industrialization and World Trade

The Industrial Revolution and improvements in transportation located around the globally for ginger trading. Throughout the 19th and 20th centuries, countries such as India, China, Nigeria, Thailand and Indonesia emerged as major producers and exporters of ginger. The commercial production of ginger has increased due to the formation of modern agricultural techniques, irrigation systems and improved methods of drying and processing.

### Modern applications and research

Today, dried ginger is a used worldwide, especially in Asian, Indian and Caribbean cuisine. Its uses extend beyond delicious taste applications and also include medicinal uses, it is used herbal and cosmetic products. Modern research continues to investigate the main health benefits of ginger, focusing on its antioxidant, anti-inflammatory and digestive properties.

### Horticulture

**Climate:** Prefers hot, humid climates with well-drained soil.

**Transplantation:** Usually cultivate from rhizome fragments with branches (eyes).

**Note:** Regular watering and shading are essential in the early stages.

**Harvesting:** Harvesting is usually done 8-10 months after planting when the leaves begin to turn yellow and dry.

### Production

The product line includes:

**Soil Building:** Make sure soil is nice and soft.

**Planting:** Plant rhizomes in beds.

**Maintenance:** Regular watering, trimming weeds and composting.

**Harvesting:** Carefully dig up the rhizomes.

**Procedure:** Washing, peeling and drying of rhizomes.

**Farming:** Farming techniques of ginger includes:

**Crop rotation:** Helps prevent soil erosion and pest accumulation.

**Organic agriculture:** Gaining popularity for supportable production.

**Pests:** Natural predators and pesticide applications.

### Transportation and exporting

Ginger is exported worldwide in various forms, including fresh, dried and powdered. The major exporters are India, China and Indonesia. Travel generally includes:

**Harvesting and Processing:** Make sure ginger is well dried and packaged before shipping no any errors shouldn't has to be taken place it may cause severe problems.

**Shipping:** Use of moisture and insect protective containers.

### Testing

Ginger is used in different ways:

**Culinary:** ginger is used in cooking for its culinary properties.

**Medicine:** It is used in medicine for its antibacterial, anti-inflammatory and digestive properties etc.

**Beverages:** In teas, soft drinks and wines.

**Aromatherapy:** As a warming and soothing essential oil.

### Nutritional Information

Ginger contains the following nutrients:

**Vitamins:** B6, C

**Minerals:** magnesium, potassium, manganese

**Calories:** Very few calories

**Fiber:** Good dietary fiber.

### Components

The main components of ginger:

**Ginger:** Major metabolites of pharmacological properties.

**Shogaol (pungent bioactive component):** It is made with ginger when it is drying and helps make it sticky.

**Essential Oils:** Ginger oil Helps with fragrance and flavour.

### Safety and adverse effects

While ginger is generally harmless, there are some side effects:

**Allergies:** Rare, but can occur in some people.

**Digestive issues:** Excessive consumption of ginger can lead to heart disease, ulcers and stomach upset.

**Blood thinners:** Blood clotting may be affected, and caution should be taken for individuals taking blood thinners shouldn't be taken when using blood thinners.

**Pregnancy:** High doses are not recommended for pregnant women without consulting a health care provider which may causes severe side effects.

### GENERAL PROCEDURE

#### Ingredients required

Dry ginger – 70g (powder)

Jaggery – 300g

Turmeric – ½ tsp

Mint – ½ tsp

Black salt – ½ tsp

Ghee – ½ tsp

### Procedure

Collect all the ingredients required. Peel the layer of ginger and cutting into pieces and grind them into fine powder. Heating the ginger paste at 90°C-100°C until the water content evaporates from the ginger paste (for wet ginger). Adding powdered jaggery to the mixture until it

melts into a viscous liquid heating it 104°C-115°C. Adding half table spoon of smoothly grinded pepper, salt, turmeric powder, mint, ghee. Stir until the mixture binds closely and in transfer to a butter paper/shaped moulds to form a shape. After drying the mixture may get into a shape of a candy.

### NO OF ATTEMPTS PERFORMED

NO. OF ATTEMPTS	Status	Reason	Changes made	Taste
Attempt - 1	Failed	Wet ginger is used it was unable to find the perfect melting point for the jaggery it was like dry jaggery	No changes held	Sweet but bitter over spice at throat
Attempt - 2	Failed	Successfully find heating point for ginger, but unable to find the melting point for jaggery it was like dry jaggery after cool down	Changes in procedure like heating temperature of ginger and jaggery.	Sweet and little spicy but taste good.
Attempt - 3	Failed	Used dry ginger powder to replace the ginger but unable to find perfect quantity for the candy	Ginger is replaced with dry ginger powder to avoid over spice	Sweet and spice at mouth and throat.
Attempt - 4	Pass	Changes made in quantities and heating temperatures	Maintained the heat temperature to the specifically required amount	Taste sweet and little bit of spice.
Attempt - 5	Pass	Slight changes were made in ingredients	Added mint for cooling sensation on candy	Taste sweet and cool hides spice taste.

### FORMULATION ADVANTAGES OF GINGER CANDY

**Helpful in digestion:** For a long time ginger is used to treat the digestive problems. Dried ginger candy made with dry ginger powder which have these dietary benefits. It can help prevent nausea, vomiting and indigestion and helps to improve the digestion.

**Convenience:** Unlike raw ginger, dried ginger candy is portable and convenient to carry. It is easy to transport and eat, making it an easy choice for those who need the benefits of ginger. Available to anyone in anytime anyplace.

**Longevity:** The drying process increases the shelf life of ginger candy as compared to fresh ginger and allow to store for a long time without risk of damage.

**Taste:** Some people find the strong flavour of raw ginger too strong. Dried ginger candies are usually accompanied by jaggery or sugar, honey, which can make them tasty while also providing the health benefits of ginger.

**Soothes the throat:** Ginger candy can calm a sore throat and can help prevent inflammation due to its warming and antiseptic properties of ginger and other ingredients used in ginger.

**Anti-inflammatory properties:** Ginger contains metabolite well known for its anti-inflammatory properties which may help to prevent the inflammation. Regular consumption of dried ginger candy can help reduce inflammation in the body. Over consumption may cause some side effects.

**Another sugary ingredient:** While ginger candy does contain sweetness, it can be a healthy alternative to other candies that have no health benefits This along with the potential health benefits, makes for a uniquely delicious experience. And also loved by children helps them to get good health in many ways.

**Traditional uses:** Many cultures have used ginger for centuries as a remedy for various nourishments and many countries used ginger in cooking. Dried ginger candy continues this tradition in a simple and fun ways.

**Natural boost:** Ginger candy can provide a natural boost because of its stimulation, which can help during a period of fatigue or low energy and also helpful in boosting immune system.

**Travel Companion:** Its long shelf life and ease of carrying make dried ginger candy an excellent travel companion, especially on trips where nutritional comfort and immune support and helps to avoid the nausea sensation during travelling.

**Antioxidants:** Ginger contains antioxidants that support the immune system, and can help fight disease and strengthen the immune system all the time.

**Weight Management:** Ginger has been studied for its crucial role in weight management by aiding digestion and metabolism, making dried ginger desserts palatable chosen by dietitians to the people.

**Stress relief:** The spicy taste of ginger can calm the mind, reduce stress and promote relaxation when eaten as a dessert and also reduce stress levels.

**Improves circulation:** Ginger is good at improve blood circulation, which can contribute to both cardiovascular health and can reduce the risk of heart disease by its over consumption.

**Menstrual Relief:** Eating ginger candy provides natural relief during menstruation. Ginger is often used to relieve menstrual cramps and discomfort. Suggestable to use in menstrual time helps to relax mind.

**Nausea symptoms:** Ginger candy is often recommended for its ability to reduce nausea and motion sickness, making it a valuable resource for travelers which have motion sickness.

**Anti-aging benefits:** Ginger's antioxidants help protect against oxidative stress that contributes to aging. Daily consumption of dry ginger candy can help young skin with total health and vitality.

**Improves mental alertness:** The stimulating properties of ginger can increase mental alertness, making it useful for tasks that require concentration and he focuses on something important.

**Various Uses:** Besides being eaten as a delicacy, dried ginger can also be used in cooking and baking, adding flavour and health benefits to a variety of dishes in different countries it is used in preparation of different medicinal products.

**Anti-inflammatory benefits:** The anti-inflammatory properties of ginger candy can help reduce joint pains and stiffness, making it useful for individuals with arthritis or problems caused by inflammation.

**Respiratory health:** Ginger candy can help clear congestion and improve respiratory function, making it useful during colds, asthma, or respiratory infections. Ginger candy helpful in improving respiratory health.

**Antimicrobial properties:** Ginger has natural antimicrobial properties that can help fight viruses and bacteria in the body, and help boost the immune system in general.

**Improves blood sugar control:** Some studies suggest that ginger may help control blood sugar levels in the body, which may be beneficial for individuals.

**Aid in Detoxification:** Ginger helps eliminate toxins from the body by increasing sweating and improving blood circulation, supporting the body's natural detoxification processes it was proved in 1990s by scientific researches conducted on ginger.

## PHYSIOCHEMICAL CHARACTERISTICS

**Physical Appearance:** Dried ginger candy is usually hard and can vary in size and shape, often taking the form of small pieces or round.

**Color:** Dried ginger candies vary in color from light brown to golden brown, depending on factors such as the type of sugar used and the method used for its preparation.

**Taste:** It has a strong and sometimes slightly chewy texture due to the crystallization of sugar and the texture of the ginger fibers when the heating temperature are no maintained properly during the candy preparation.

**Sweetness:** The combination of ginger's natural sweetness, sugar or jaggery makes dried ginger candy sweet, spicy and slightly sweet.

**Smell:** Ginger gives off a spicy warmth and distinctive aroma, most identified when chewing or popping candy.

**Moisture content:** Dried ginger candy has a low water content, usually less than 5%, which is responsible for its shelf life and resistance to microbial growth on candy.

**pH Level:** The pH level of dried ginger candy can vary but generally ranges from neutral to slightly acidic, which is influenced by ingredients it may increase or decreases the pH level of the candy.

**Sugar Content:** Contains sugar or sweeteners(jaggery) that contribute to sweetness. The amount of sugar can vary depending on the recipe or method and by quantities taken for the candy.

**Nutritional properties:** Dried ginger candy contains nutritious compounds derived from ginger such as gingerol, shogaol, and other phenolic compounds, contributing to its health-improving properties.

**Calorie Value:** Provides calories primarily from sugars and carbohydrates, generally ranging from 15 to 20 calories per serving depending on size and style and weight of candy and the quantities of candy has been taken to consider.

## EVALUATION TESTS

**Shape:** Flower

**Hardness:** 6.7 psi (pounds per square inch)

**Friability:**

Before - 7.46gms

After - 6.17gms

**Size**

Length – 3.4gms

Width – 1.6gms

**General appearance**

**Smell** – warm and spicy with bit of sweetness.



**Taste** – Sweet and little bit of spice

#### NUTRITIONAL CHART OF USED INGREDIENTS

Ingredients	Weight	Calories	Carbohydrates	Fats	Protein
Dry ginger (powder)	70g	268kcal	60gms	60gms	60gms
Jaggery	300g	1200kcal	300gms	<1gm	<1gm
Turmeric	½ tsp	10kcal	2gms	0.2gms	0.2gms
Mint	½ tsp	2kcal	0.4gms	0.1gms	0.1gms
Pepper	½ tsp	6kcal	1.5gms	0.1gms	0.3gms
Ghee	½ tsp	54kcal	0gms	6gms	0gms

#### THE MAIN USES OF GINGER CANDY

**Anti-inflammatory Properties:** Ginger has gingerol and zingerone contains of anti-inflammatory properties that help to decrease throat and sinus infection that may helpful in relieving discomfort to the user by chewing the candy.

**Antioxidant Effects:** Ginger is a rich source of antioxidants that can helps to fight off infections and improve immunity, which is helpful in recovering from cold and flu faster.

**Expectorant Properties:** Ginger candy encourages liquefying and loosening of mucus in the sinuses and lungs thereby making it easy to expectorate mucus thus reducing blockage of nose and throat.

**Soothing Effects:** The warming effect of ginger may relieve soreness in the throat, as well as reduce coughing and causes a relief sensation.

**Digestive Benefits:** In addition to its soothing quality, ginger candy often contains ginger oil or extracts that calm an upset stomach or prevent vomiting usually seen with colds or even coughs helps in good digestion and helps to improve the action of digestive system.

#### CONCLUSION

Ginger has many advantages it acts as an analgesic and it has a anti-inflammatory action, ginger has many medicinal uses. Dry Ginger candy undergoes to category of lozenges it helps to treat many health issues like seasonal flu, cold, sinus and ulcers but the main disadvantage of ginger candy is causes gastric ulcer and heart disease by over consumption of ginger by taking ginger in limit may also helpful in treatment of many diseases and it is also helpful in. boosting immune system. Ginger candy helps to boost the activity of ginger by improving of its taste and it also helpful to treat intestine ulcers, it is loved by children because of its combined taste of other ingredients. The other ingredients used in this candy are used to improve the taste and medical advantages it was also a good travel companion for those which have motion sickness, due to the lack of water content in dry ginger the candy is easy to store for a long time in perfect package and storage conditions. It is easy to carry anywhere, it is suitable for any age the ginger candy is better than a normal candy which doesn't have any medical advantages or medicinal

uses it is also cost effective available at any place. We would like to conclude that the dry ginger candy is helpful in many ways easy to carry anywhere and also loved by everyone especially children which may helpful to improve the health.

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