



## “Unveiling The Healing Power: Dragon Fruit Herbal Cough Syrup Review”

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**Abstract:** Dragon fruit, known for its vibrant appearance and potential health benefits, is increasingly recognized for its medicinal properties. This review article provides an in-depth analysis of the development of dragon fruit-based cough syrup, emphasizing its emergence as a natural and efficacious remedy for respiratory health. Dragon fruit (*Hylocereus costaricensis*) has been recognized for its abundant vitamin C content, potent antioxidants, and anti-inflammatory properties, all of which make it a promising candidate for cough syrup formulation. This study not only offers an innovative approach to herbal cough syrup development but also emphasizes the importance of utilizing natural ingredients for respiratory health. The dragon fruit herbal cough syrup with a honey base provides an alternative, plant-based option for individuals seeking relief from common respiratory complaints while aligning with the increasing demand for natural remedies<sup>[24]</sup>. Preliminary findings indicate that the dragon fruit herbal cough syrup exhibits notable antioxidant and anti-inflammatory properties, making it a promising candidate for alleviating cough symptoms. <sup>[30,31]</sup>

**Keywords:** Dragon fruit (*H.costaricensis*), Herbal Cough Syrup, Anti-oxidant, Anti-inflammatory

### **Introduction:**

A herbal cough syrup is a liquid medication formulated with natural, plant-based ingredients such as herbs, honey, and other botanical extracts. It is used to provide relief from coughs, sore throats, and related symptoms. Herbal cough syrups are often considered an alternative to synthetic cough medicines and are believed to have soothing and expectorant properties. These syrups are often used as a more natural and holistic approach to managing respiratory symptoms. They are believed to offer relief from coughing, soothe irritated throats, and may have expectorant or antimicrobial properties.<sup>[15]</sup>

Herbal medicine is a holistic approach to healing that relies on the vast knowledge of traditional and indigenous practices from various cultures around the world. The use of plants, herbs, and natural substances in herbalism is deeply rooted in the wisdom passed down through generations. As our understanding of the properties and effects of these natural remedies continues to evolve, so does the integration of herbal medicine into modern healthcare. Many people today seek the benefits of herbal remedies, not only for their potential effectiveness in addressing health issues but also for their perceived gentleness on the body and the belief that they can complement conventional medical treatments. However, it's essential to remember that, just like pharmaceuticals, herbal treatments should be used with care and guidance from qualified practitioners to ensure safety and efficacy.<sup>[29]</sup>

**Cough:**

Coughing is a reflex action that helps clear the airways of mucus, irritants, or foreign particles. It can be a symptom of various conditions, such as respiratory infections, allergies, or even a common cold.<sup>[20]</sup> If you have a persistent or severe cough, it's advisable to consult a healthcare professional for a proper diagnosis and appropriate treatment. They can help determine the underlying cause and recommend the best approach to manage and relieve your cough.<sup>[18]</sup>

**Causes of Cough:**

Coughing can be caused by a variety of factors and underlying conditions, including:

- **Respiratory Infections:** The most common cause of cough is respiratory infections, such as the common cold, flu, bronchitis, or pneumonia.
- **Allergies:** Allergic reactions to pollen, dust, pet dander, or other allergens can lead to a persistent cough.
- **Asthma:** People with asthma may experience coughing as a symptom, often triggered by allergens or irritants.
- **Gastroesophageal Reflux Disease (GERD):** Acid reflux can lead to a chronic cough when stomach acid flows back into the esophagus and irritates the throat.<sup>[19]</sup>
- **Environmental Irritants:** Exposure to pollutants, smoke, or chemicals can cause coughing.
- **Medications:** Certain medications, especially those like ACE inhibitors, can cause a persistent cough as a side effect.
- **Chronic Obstructive Pulmonary Disease (COPD):** COPD, including chronic bronchitis and emphysema, can result in a chronic cough.
- **Postnasal Drip:** Excess mucus running down the back of the throat due to allergies or sinus issues can trigger coughing.
- **Lung Conditions:** Other lung conditions like interstitial lung disease or lung cancer can cause persistent coughing.
- **Psychological Factors:** Coughing can sometimes be related to psychological factors, such as stress or anxiety.<sup>[18,19]</sup>

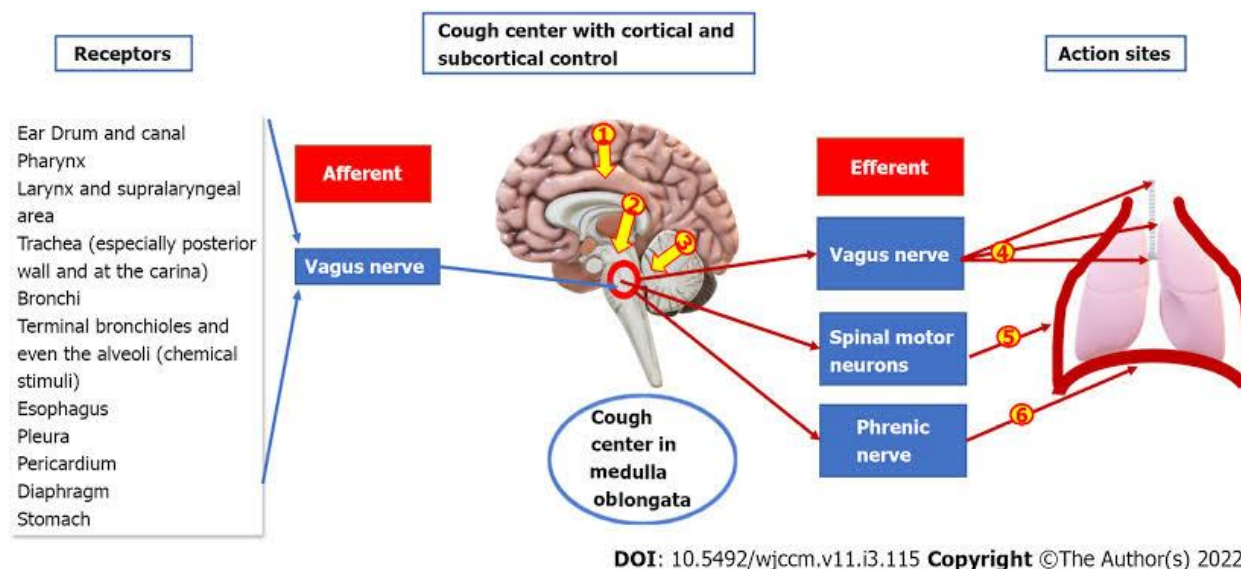
**Classification of cough :**

[5]

Sr.no.	Types of cough	Properties
I.	Acute cough	Not more than three week's duration.
II.	Chronic cough	More than three week's.
III.	Dry cough	No mucous or secretion.
IV.	Wet cough	With mucous and secretion.
V.	Cough from chest and throat	Productive or non-productive.
VI.	Paroxysmal cough	Spasmodic and recurrent.
VII.	Bovine cough	Soundless cough due to paralysis or larynx

### **Mechanism of action:**

The mechanism of action of a cough involves the detection of irritants in the airway, which stimulates sensory nerves. These nerves transmit signals to the brainstem's cough reflex center. In response, muscles in the respiratory system rapidly contract, creating a quick inhalation followed by the closure and subsequent reopening of the glottis to forcefully expel air, expelling irritants or mucus and clearing the airway. This reflex helps protect the respiratory system from harmful substances.<sup>[6,29]</sup>



**Figure .1. Mechanism of action of Cough**

### **Dragon fruit:**

Pink-fleshed dragon fruit, also known as *Hylocereus costaricensis* or the red dragon fruit, is a tropical fruit with distinctive characteristics.

Different species of dragon fruit

1. Hylocereus Undatus(white flesh pitaya)
2. Hylocereus Costaricensis(Pink flesh pitaya)
3. Hylocereus Megalanthus(Yellow skin ,white flesh pitaya)



Figure 2. Pink Dragon fruit (*H. Costaricensis*)

- **Origin and distribution**

The dragon fruit's (*H. Costaricensis*) scientific name is deduced from the Greek word hyle (woody), the Latin word cereus (waxen) and Latin word undatus, which refers to the crimped edges of fruit's stems. The origin of the dragon fruit is yet unknown, but it's presumably native to Central America. It's also known as pitahaya in Mexico, and pitaya roja in Central America and northern South America. The Spanish name pitahaya may also relate to several other species of altitudinous cacti with flowering fruit

- **Variant names:**

Common names: dragon fruit, dragon pearl fruit, pitaya, strawberry pear, night-blooming cereus, Belle of the Night, and Cinderella plant.

Scientific name: *Hylocereus Costaricensis*

Malay/Indonesian: buah naga or buah mata naga

Mandarin: long guo

Vietnamese: thanh long

**Pink dragon Fruit:**

- **Biological Source** – Pink dragon is obtained from climbing plants of genus *Hylocereus*, species *costaricensis*, belonging to family *Cactaceae*.
- **Chemical constituent:** Dragon fruit, also known as pitaya, contains several chemical constituents, including:
  1. **Vitamins:** Dragon fruit is rich in vitamins such as vitamin C, which is an antioxidant that supports the immune system, and B vitamins like B1 (thiamine), B2 (riboflavin), and B3 (niacin), which are essential for various bodily functions.
  2. **Minerals:** It contains minerals like iron, which is important for blood health, and calcium, which is vital for bone and teeth health.

3. **Dietary Fiber:** Dragon fruit is a good source of dietary fiber, which aids in digestion and can help manage blood sugar levels.
4. **Phytonutrients:** It contains various phytonutrients, including betalains, which are responsible for the fruit's vibrant colours and have antioxidant properties.
5. **Antioxidants:** Dragon fruit contains antioxidants that can help protect cells from damage caused by free radicals.
6. **Carbohydrates:** It is primarily composed of carbohydrates, particularly natural sugars like fructose.
7. **Protein:** While it's not a significant source of protein, it does contain a small amount.
8. **Fats:** Dragon fruit is low in fat, and the fat it contains is mostly healthy unsaturated fats.
9. **Water:** The fruit has a high water content, which helps keep you hydrated.
10. **Phosphorus and Magnesium:** These minerals are also found in smaller amounts in dragon fruit

### **Characteristics of dragon fruit:-**

- **Appearance:** Pink-fleshed dragon fruit has bright pink to red flesh with tiny, black, edible seeds, contrasting with its vibrant green or red exterior. The skin is covered in small, leaf-like scales.
- **Taste:** The flavour of pink dragon fruit is often described as sweet and mildly tangy. It's likened to a combination of kiwi and pear.
- **Nutritional Value:** Pink dragon fruit is a nutritious fruit rich in vitamins, minerals, and antioxidants. It's a good source of vitamin C, fibres, and several essential minerals like iron and magnesium.<sup>[13]</sup>
- **Health Benefits:** The fruit's high vitamin C content supports the immune system, while its fibre can aid digestion. Antioxidants in dragon fruit may help protect cells from damage.
- **Culinary Uses:** Pink dragon fruit can be eaten fresh by cutting it in half and scooping out the flesh. It's also used in fruit salads, desserts, and as a garnish for various dishes.
- **Growing Conditions:** This variety of dragon fruit is typically grown in tropical and subtropical regions. It requires well-drained soil and prefers a warm climate with ample sunlight.
- **Cultivation:** Pink dragon fruit is usually grown on climbing cacti. The plant produces large, white, fragrant flowers, followed by the fruit. It's known for its ability to grow in arid conditions.
- **Varieties:** There are different cultivars of pink-fleshed dragon fruit, each with slight variations in flavour, skin colour, and size.<sup>[12]</sup>
- **Materials and method used:**

### **Materials –**

1. **Dragon fruit**
2. **Honey**
3. **Fennel**
4. **Tulsi**
5. **Adulsa**

## Scientific Classification of materials:-

### I) Dragon fruit:

1. **Kingdom** – Plantae
2. **Clade** – Tracheophytes
3. **Order** – Caryophyllales
4. **Family**- *Cactaceae*
5. **Genus** – *Selenicereus*
6. **Species** – *H. Costaricensis*

### II) Tulsi:

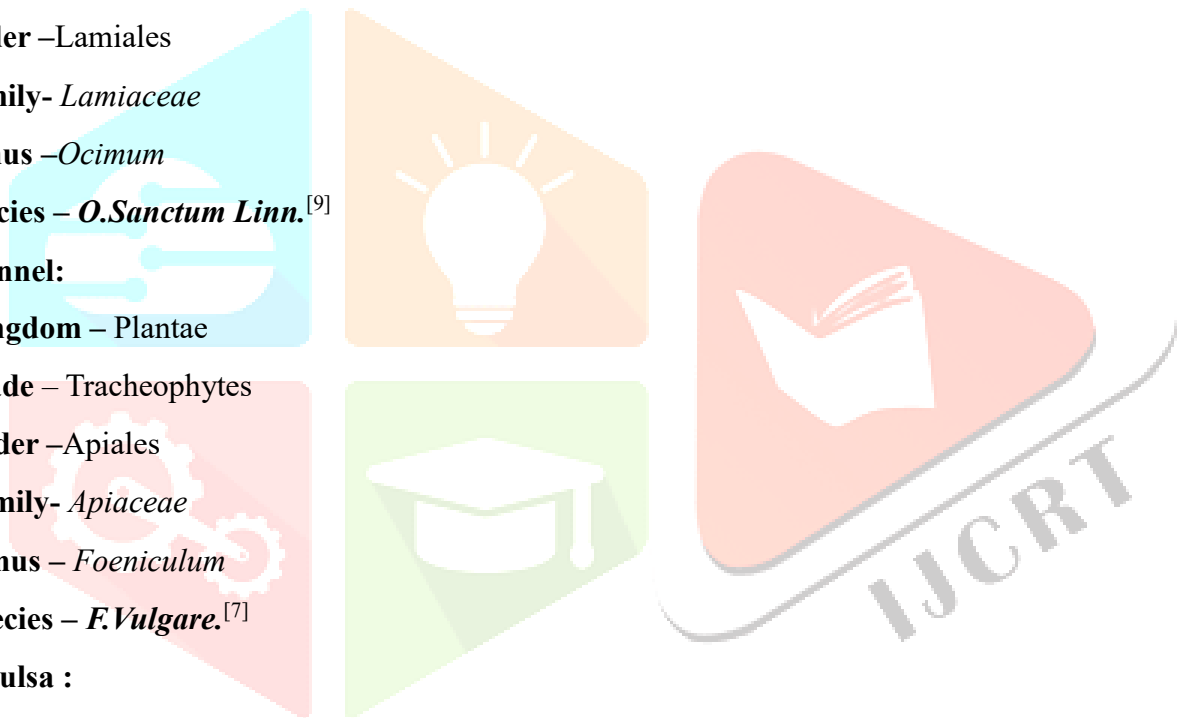
1. **Kingdom** – Plantae
2. **Clade** – Tracheophytes
3. **Order** –Lamiales
4. **Family**- *Lamiaceae*
5. **Genus** –*Ocimum*
6. **Species** – *O.Sanctum Linn.*<sup>[9]</sup>

### III) Fennel:

1. **Kingdom** – Plantae
2. **Clade** – Tracheophytes
3. **Order** –Apiales
4. **Family**- *Apiaceae*
5. **Genus** – *Foeniculum*
6. **Species** – *F.Vulgare.*<sup>[7]</sup>

### IV) Adulsa :

1. **Kingdom** – Plantae
2. **Clade** – Tracheophytes
3. **Order** - Lamiales
4. **Family**- Acanthaceae
5. **Genus** –justicia
6. **Species** – *J.Adhatoda*<sup>[8]</sup>



**Tulsi****Fennel****Adulsa****Dragon fruit****Honey****Figure 3. Material of herbal formulation.****Extraction methods of dragon fruit peel :**

Extracting dragon fruit peel can be done by following these steps:

1. Wash the Fruit: Start by washing the dragon fruit to remove any dirt or pollutants from the skin.
2. Cut the Fruit :Use a sharp cutter to cut the dragon fruit in half. You can cut it vertically or horizontally.
3. Peel the Skin: Gently peel the skin down from the meat. The skin should come off fairly fluently.
4. Use a ladle You can also lade out the meat with a ladle if the peel isn't coming off fluently.
5. Rinse and Store: wash the peel to remove any remaining fruit bits and stroke it dry. You can also use the peel in colorful ways, similar as in smoothies, teas, or as a nature<sup>[13]</sup>

**Formulation of Dragon fruit cough syrup (100 ml) :**

Sr.no.	Ingredients	Uses
1)	Dragon fruit extract ( <i>H.Costariscensis</i> )	Antioxidant, Anti-inflammatory, Anti-microbial
2)	Honey	Expectorant
3)	Adulsa extract ( <i>Justica Adhatoda</i> )	Anti-tussive Anti-inflammatory <sup>[16]</sup>
4)	Tulsi extract ( <i>Ocimum Sanctum</i> )	Anti-tussive Antioxidant Anti-inflammatory <sup>[16]</sup>
5)	Fennel extarct ( <i>Foeniculum Vulgare</i> )	Aromatic flaour <sup>[16]</sup>
6)	Methyl paraben ,Propyl paraben	Preservatives
7)	Sucrose	Base Sweetening agent

**Fennel:****Figure 3. Foeniculum Vulgare**

- **Synonyms**:- Large Fennel, Sweet Fennel, Fennel fruit, Saunf (Hindi); *Fructus Foeniculi*.



- **Biological source:** -

Fennel is the dried ripe fruits of plant known as *Foeniculum vulgare* Mill, Family: *Umbelliferae*, obtained by cultivation. It should contain not less than 0.6% of anethol calculated on dried basis.

- **Cultivation and Collection:**

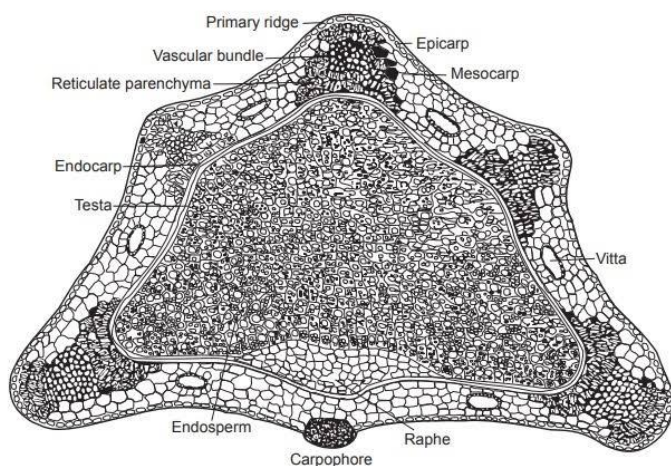
Fennel is cultivated by dibbling method. Quality fruits of good germination rate are sown just before the spring. Free branching of herb and specific arrangements of leaves on the stems required plenty of space in between two plants and rows. 4-5 seeds are put at a time, in holes at a distance of 25cm in between them. Well drained and calcareous soil sunny situation is found to be favourable for cultivation of fennel. In India nearly 90% of the fennel production comes from Gujarat only.

- **Geographical source:-**

Fennel is indigenous to Mediterranean region of Asia and Europe. It is widely cultivated in Russia, India, Japan, southern Europe, China and Egypt.

- **Chemical constituents:-**

Fennel contains volatile oil (2-6.5%) and fixed oil (12%). The main constituent of the volatile oil Are phenolic ether, anethole (50-60%) and ketone, fenchone (18-20 %) which give the fruits its Distinct odour and taste; the other constituents of volatile oil are anisic aldehyde, anisic acid, dipentene and phellandrene, Etc.<sup>[28]</sup>



**Figure 4: T.S. of fennel.**

- **Uses:-**

Fennel is used as stimulant, aromatic, stomachic, carminative, and expectorant. Anethole is used in oral and dental preparations. Fennel is used in diseases of the chest, spleen and kidney. Pharmaceutically it is used as flavouring agent.

**Tulsi :**



Figure 5. *Ocimum sanctum* Linn.

- **Synonyms:-**

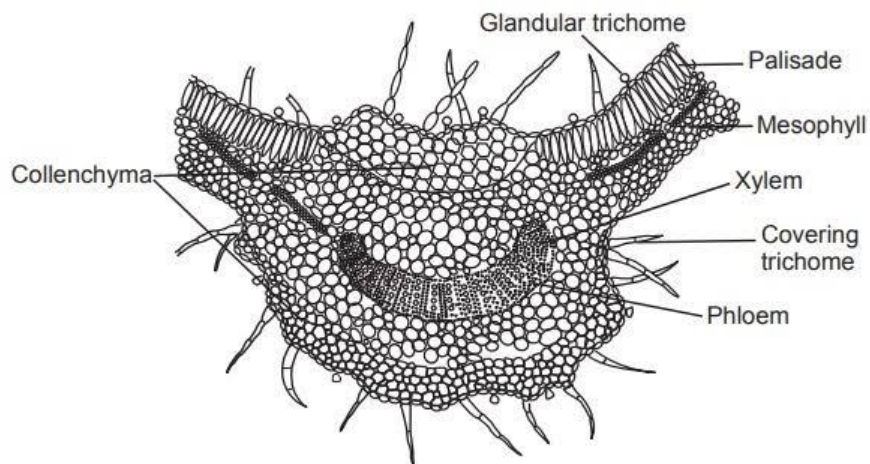
*Sacred basil, Holy basil,*  
*Merr.Lumnitzera tenuiflora (L.) Spreng.*  
*Moschosma tenuiflorum (L.) Heynh<sup>[9]</sup>*  
*Ocimum anisodorum F.Muell.*  
*Ocimum caryophyllum F.Muell.*

- **Biological Source:-**

Tulsi consists of fresh and dried leaves of *Ocimum sanctum* Linn. (Syn. *Ocimum tenuiflorum*) Family -*Lamiaceae*, and It contains not less than( 0.40 %) Eugenol on dried basis.<sup>[1,9]</sup>

- **Geographical Source: -**

It is herbaceous, multi branched annual plant found throughout India. It is considered as sacred by Hindus. The plant is commonly cultivated in garden and also grown near temples. It is Propagated by seeds, Currently Tulsi is cultivated commercially for its volatile oil.<sup>[1,9]</sup>



**Figure 6: T.S. Tulsi leaf.**

- **Chemical constituents:-**

It contains approximately 70 per cent eugenol, carvacrol (3%) and eugenol-methyl-ether (20%). It Also contains caryophyllin. Seeds contain fixed oil with good drying properties. Also contains alkaloids, glycosides, saponin, tannins, and Vitamin C. <sup>[1]</sup>

- **Standards of quality:-**

Foreign organic matters : Not more than 2.0%

Ash value: Not more than 15.0%

Acid insoluble ash: Not more than 5.0%

Loss on drying: Not more than 12.0%

Acid soluble extract: Not less than 3.0%

Water soluble extract: Not less than 10.0%

- **Uses:-**

The oil is antibacterial and insecticidal. The leaves are used as stimulant, aromatic, anti-catarrhal, Spasmolytic, and diaphoretic. The juice is used as an antiperiodic. Tulsi has expectorant and anti-Inflammatory properties. <sup>[1,9]</sup>

**Adulsa:**



**Figure 7. J. Adhatoda .**

- **Synonyms:** -Malabar nut, *Adhatoda*, *Justica adhatoda*, vasaka.<sup>[1]</sup>

- **Biological sources:** -

The biological source of Adhatoda is dried and fresh leaves of this plant. It belongs to family *Acanthaceae*. and contains not less than 0.6 % of vasicine on dried basis<sup>[1]</sup>.

- **Chemical constituents:-**

The chemical constituent of Adhatoda are alkalis tannins flavonoids Serpent sugar and glucoside.

The leaves of Vasaka contain Vitamin C in large amount. The roots of this plant contain Vasicinolone, basil and peganine.<sup>[24]</sup> It contains quinazoline derivatives such as vasicine 2.0 to 2.5 %,vasicinone and 6-Hydroxy vasicine. Biochemically vasicine is oxidised to its ketonic derivatives vasicinone and the latter exerts main activity as bronchodilator.The drug also contains volatile oil betain and vasakin. It is also reported as vasaka contains Adhatodic acid.<sup>[1]</sup>

- **Standards of Quality:-**

Foreign oraganic matter: not less than 2.0%

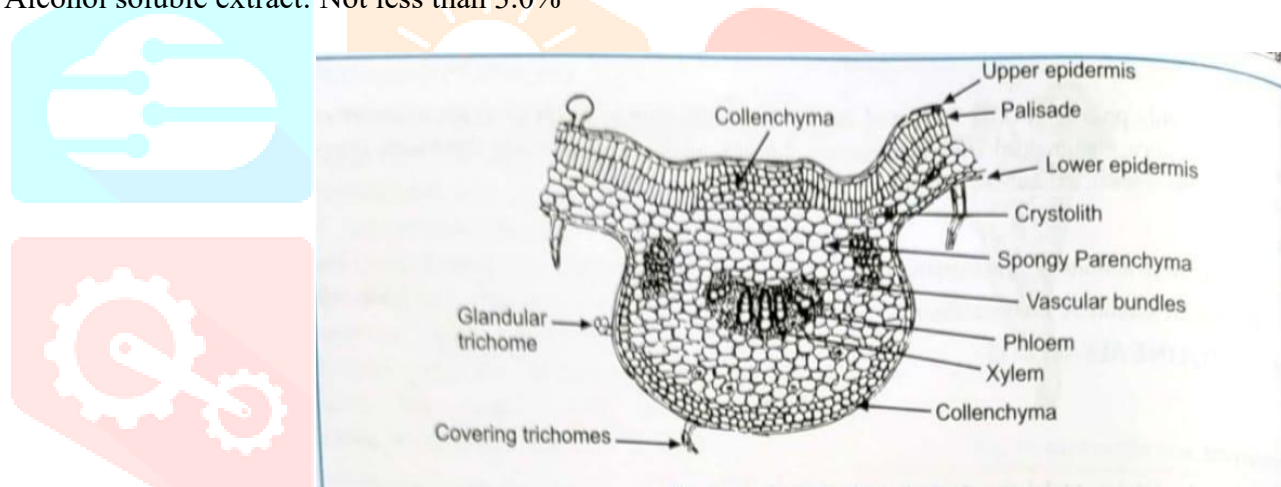
Total ash value: Not more than 21.0%

Acid insoluble ash: Not more than 2.0%

Loss on drying: Not more than 12.0%

Water soluble extract: Not less than 22.0%

Alcohol soluble extract: Not less than 3.0%



**Figure 8: T.S of adhatoda leaf**

- **Uses:-**

Used as expectorant. It is used to treat leprosy blood disorder thirst and vomiting. It is used to treat Infertility it also have anti-ulcer activity.<sup>[1,24]</sup>

The pharmacological investigation have shown that vasicine also shows oxytocic property similar to oxytocin and methyl ergometrin.

**Honey:****Figure 9: Honey.**

- **Synonyms:-** Madhu, Mel<sup>[1]</sup>, Nectar Sweet nectar, Ambrosia (in a poetic context)<sup>[10]</sup>

- **Biological sources:-**

Honey is produced by honeybees primarily from the nectar of flowering plants. Honey is a sugar secretion deposited in Honey comb by the bees, *Apis mellifera*, *Apis dorsata*, and other species of *Apis*, belonging to Family – *Apidae*.<sup>[1]</sup>

- **Chemical constituents:-**

Honey has a content of 80–85% carbohydrates, 15–17% water, 0.3% proteins, 0.2% ashes and minor quantities of amino-acids, phenols, pigments<sup>[10]</sup> and vitamins, Glucose 35%, Fructose 45%, sucrose 2%.<sup>[1]</sup>

- **Uses:**

Raw honey is rich in antioxidants, Using honey to replace table sugar helps improve diabetes.

The antioxidants in honey help lower blood pressure.<sup>[11]</sup>

Honey helps improve cholesterol, Honey helps reduce triglyceride levels.<sup>[11,27]</sup>

**Evaluation test for Herbal cough syrup:-**

- 1) **Colour Examination.**
- 2) **Odour examination.**
- 3) **Taste Examination .**
- 4) **pH Determination.**
- 5) **Viscosity Determination.<sup>[3]</sup>**

The viscosity of each formulation was determined by using Ostwald's Viscometer.

- 6) **Determination of Density.**

1. The symbol "p" is used to denote density.

2. Formula of density:<sup>[15]</sup>

Density of liquid under test (syrup) = weight of syrup under test(W<sub>3</sub>) / volume of final syrup under test(V).

- 7) **Determination of anti-microbial activity.**

- 8) **Stability testing.<sup>[2]</sup>**

- 9) **Determination of ethanol extractive value.<sup>[26]</sup>**

## **Conclusion:**

Herbal cough syrup is an Ayurveda medicine which is useful in many chronic health problem such as cough, cold, fever, respiratory infection and disorders among human. As a combination of herbs, it is safe. Herbal syrup including natural herbs, like tulsi, Honey, fennel ,Dragon fruit, and adulsa which have various action and effect on reducing acute or chronic cough and cold and act as cough suppressant having expectorant and anti-tussive property.

*(H.clostarscensis)* known as Pink Dragon fruit is the fruit in family *Cataceae*. Reach in Vitamin C, Anti-microbial ,Anti-inflammatory and Tulsi , Adulsa reach in Anti –tussive properties used in herbal cough syrup. In this review, I conclude about herbal cough syrup that, herbal cough syrups is a safest herbal medicine which is use for treatment of cough and cold.

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