

A Comprehensive Study on Herbal Electuary for the Treatment of Cough in Animals

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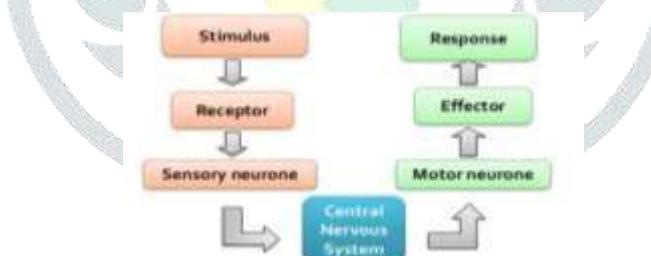
ABSTRACT

Cough Electuary is a dosage form composed of two or more drugs, used for the treatment of Cough or any other respiratory conditions/diseases in animals. Cough is a sudden, explosive exhalation of air that functions to clear material from the airways. Coughing is the way in which the lungs and airways are protected from inhaled particles. Coughing sometimes brings up sputum, a mixture of mucus, debris, and cells expelled from the lungs. These all symptoms are exactly the same in humans as well as in animals. Many dosage forms are now available for treating cough in animals like tablets, capsules, syrups & electuaries but the effective dosage form with rare side-effects is in the form of electuary. A thorough history and physical examination help the veterinarian decide the causes of cough in animals and also which diagnostic tests to be recommended and which therapies are most likely to be effective. Nowadays, people move towards the ayurvedic science as there are no side-effects to be shown during the treatment. Current momentum in the Electuary form of drug for coughing hold a promise toward much improved therapies for the treatment of Cough in Animals.

Keywords: Cough, Electuary, Bovine Respiratory Disease (BRD), Vasaka, Zebrawood, Bael, etc.

INTRODUCTION

Cough is a sudden, explosive exhalation of air that functions to clear material from the airways. Coughing sometimes brings up sputum (also called phlegm), a mixture of mucus, debris, and cells expelled from the lungs. The internal laryngeal nerve carries the sensory information away from the area above the glottis in the trachea to the cough center located in the medulla oblongata via the vagus nerve. Stimulation of this area by dust or foreign particles produces a cough to remove the foreign material from the respiratory tract before it reaches the lungs. [1]

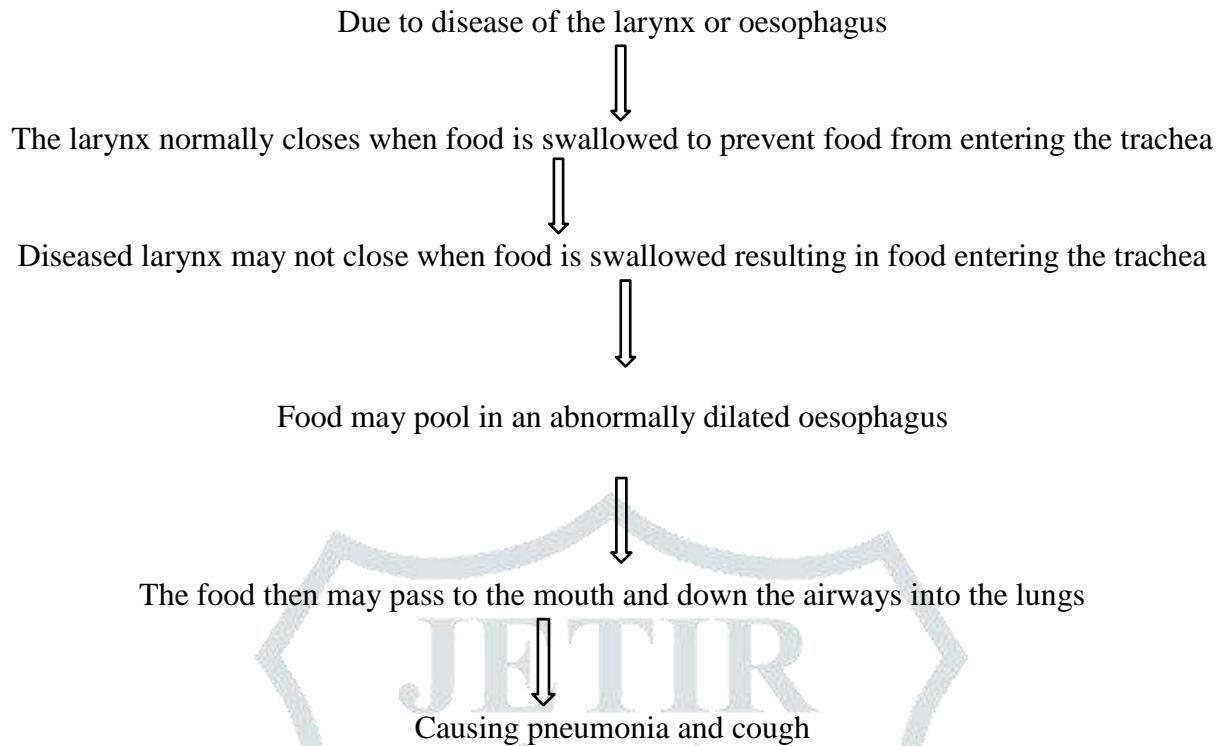


Flow chart of having Cough response from Stimuli

COUGH IN ANIMAL

The Coughing Animal

Coughing occurs during or shortly after eating:



Why study Coughing in Animals using human symptoms ?

Animal models of human disease are imperfect, and thus, whenever possible, research related to these diseases should be carried out using humans. But the symptoms and causes of human diseases including those diseases associated with cough are regulated by cells, organ systems and reflex pathways that have remained remarkably unchanged amongst animal species. Coughing, for example can be evoked in all species studied by mechanically stimulating the airways mucosa [2-8].

(a) Mechanical stimulation	(b) Other stimulation
Mucus	Airways obstruction
Foreign body	Lung inflation/hyperinflation
Tumour	Direct Nasal stimulation
	Acidification of the oesophagus

*Table: (a) Stimuli Evoking Cough in Humans / Animals.
(b) Stimuli that do not reliably evoke cough in humans / animals.*

TYPES OF COUGH

Type of cough	Characteristic of cough
Productive	- Moist - Low-pitched - Material expectorated from trachea into pharynx—usually swallowed in the dog or cat
Non-productive	- Dry - Harsh, high-pitched, honking - Expectoration of mucus—possible but not characteristic

Table: Classification of cough: productive vs. non-productive.

Type of Cough	Definition	Example	Treatment
Purposely	Beneficial cough expulsion of material & air in airways assists to eliminate underlying problem	- Bacterial pneumonia—expel purulent material - Inhaled foreign body—expel foreign material	Treat the underlying problem
Warning	Manifestation of a serious underlying disease process	- Pulmonary edema - Pulmonary neoplasia - Pulmonary thromboembolism - Severe allergic respiratory disease	Immediate treatment needed of underlying condition
Nuisance	Cough reflex Unnecessarily triggered	- Airway collapse - Chronic sterile bronchitis - Cardiomegaly causing tracheal/bronchial pressure	Cough suppression is indicated in addition to other treatments

Table: Classification of cough: purposeful vs. warning vs. nuisance.

DISEASE OF THE RESPIRATORY SYSTEM IN ANIMALS

As with the **Bovine Respiratory Disease (BRD)** complex, stress and minor viral pathogens may predispose to *Mycoplasma pneumonia*. The disease occurs in intensively reared lambs that live in areas with poor ventilation and in assembled groups of lambs in feedlots; it most commonly develops as maternal antibody levels wane. Reservoirs such as older animals and convalescent adults infected lambs mainly after weaning. **Bovine respiratory disease (BRD)** is a multifactorial disease of welfare and economic significance to the feedlot industry globally. Bovine respiratory disease results from a combination of environmental and physiological stressors prior to and upon feedlot entry such as transportation, mixing of unfamiliar animals, and exposure to viral and bacterial agents [9]. Current diagnosis methods rely on subjective visual signs of illness, often combined with rectal temperature or lung auscultation to trigger antimicrobial treatment protocols [10]. These diagnosis methods have varying accuracy in diagnosing BRD and the exploration of alternative diagnosis methods is warranted. [11, 12, 13]

DISEASES OF CATTLES

Bacterial Pneumonia in Cattle

❖ **Pasteurellaceae**

The severe pneumonic damage characterized by pulmonary invasion of *M. haemolytica* and other bacteria is associated with the production of virulence factors which facilitate colonization of the lower respiratory tract [14].

Environmental Stresses

How animals handle stress can affect energy metabolism. This may be due to illness as severity of **Bovine Respiratory Disease** has been shown to reduce carcass marbling; impacts on tenderness do not seem to be obviously impacted but have not been intensely studied.

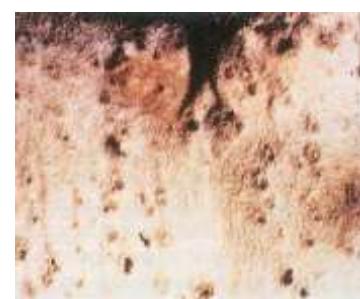
Para-influenza Viruses in animals

BPIV-3 was isolated from a respiratory disease epidemic in cattle. It is often isolated from bovine respiratory disease, shipping fever, which occurs during or after cattle transport.

DISEASES OF SHEEP & GOATS

❖ **Sheep & Goat Pox**

Sheep & goat pox is a contagious viral disease of sheep and goats manifested by popular & pustular eruptions on the skin & in generalized conditions with haemorrhagic inflammation of the respiratory tract.

*Lesions on the muzzle and lips**Necrosis and coalescing of the lesions and loss of wool.*

Diseases caused by Viruses

❖ Rift Valley Fever

RVF is an acute viral disease of sheep, cattle, goats and humans. It is manifested with hepatitis and high mortality in young lambs and calves, and abortion in adult animals. Rift valley fever resembles influenza in humans.

*RVE. Encrustation around the muzzle.*

❖ Scrapie

Scrapie is a chronic disease of the central nervous system in sheep and occasionally goats characterized by itching, nervous signs and a long incubation period. It is caused by a viral agent called “*viroid*” or “*prion*”, which has some of the characteristics of the virus, a “slow” virus.

*Incoordinated gait, twitching of muscles and wild expression in the eyes.*

Diseases caused by Bacteria

❖ Back Quarter (Black Leg)

Black quarter is an acute infectious disease of sheep and cattle manifested by inflammation of the muscles, toxæmia and high mortality. It is caused by Clostridium chauvoei.

❖ Infectious necrotic hepatitis (Black Disease)

Black disease causes acute necrotic hepatitis in sheep and cattle. It is caused by bacterium *Clostridium novyi* in association with immature fluke invasion of the liver.

Disease caused by Helminths

❖ Fascioliasis

The fluke *Fasciola hepatica* is most frequently found in sheep and cattle and less often in goats and swine. Acute fascioliasis occurs almost entirely in sheep. In sheep and cattle, wandering flukes damage liver tissue and bile ducts which then become thickened and fibrous.

TREATMENT FOR BOVINE RESPIRATORY DISEASE

Positive bacterial cultures include antibiotic sensitivity testing but this is to be used as a guide for selection of an appropriate treatment regime by the veterinarian. The three rules of antibiotic therapy remain valid today.

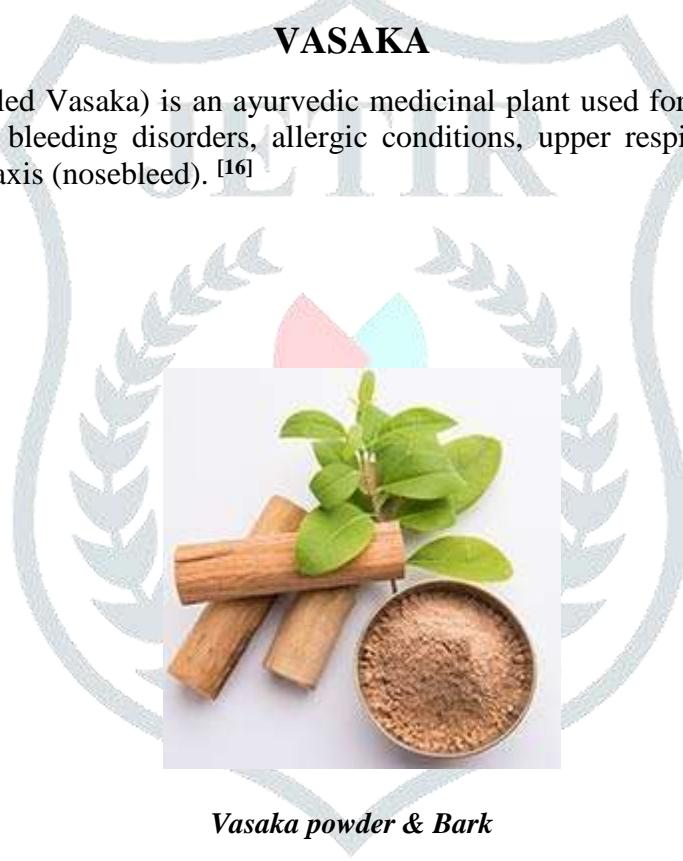
- Proper early diagnosis
- Selection of an appropriate antibiotic
- Proper dosage, route and treatment schedule

Another recommendation is that effective treatment should be accomplished with as little stress to the cattle as the management capabilities will allow. Some of these animals are clinging to life by only a thread; added stress may send them into the abyss. When the situation becomes sufficiently dire, metaphylaxis or mass medication may be the best or only option but make sure there are adequate justifiable reasons for the added stress and expense of treating the entire herd. Here, we can also learn a little from the feedlot situation but the veterinarian should develop an algorithm that works. [15]

DRUGS USED TO TREAT COUGH IN ANIMALS

VASAKA

Adhatoda Vasica (also called Vasaka) is an ayurvedic medicinal plant used for a cough, asthma, breathing trouble, nasal congestion, bleeding disorders, allergic conditions, upper respiratory infections, excessive uterine bleeding, and epistaxis (nosebleed). [16]



Vasaka powder & Bark

TRADITIONAL USES

Traditional medicine (Ayurveda, Unani, Homeopathy, Naturopathy, Siddha medicinal system), as old as the origin of man has been reported to be popular amongst more than two- third of the world population (mainly in the developing countries: WHO 80%) for primary health care^[17,18,19].

MEDICINAL PROPERTIES

Vasaka has following medicinal properties. [16]

- Antitussive – relieves a cough
- Expectorant – promotes expectoration
- Bronchodilator – dilates bronchi
- Anti-viral
- Anti-inflammatory – reduces inflammation of airways
- Anti-allergic – Fights off allergies
- Appetite stimulant – Improves appetite

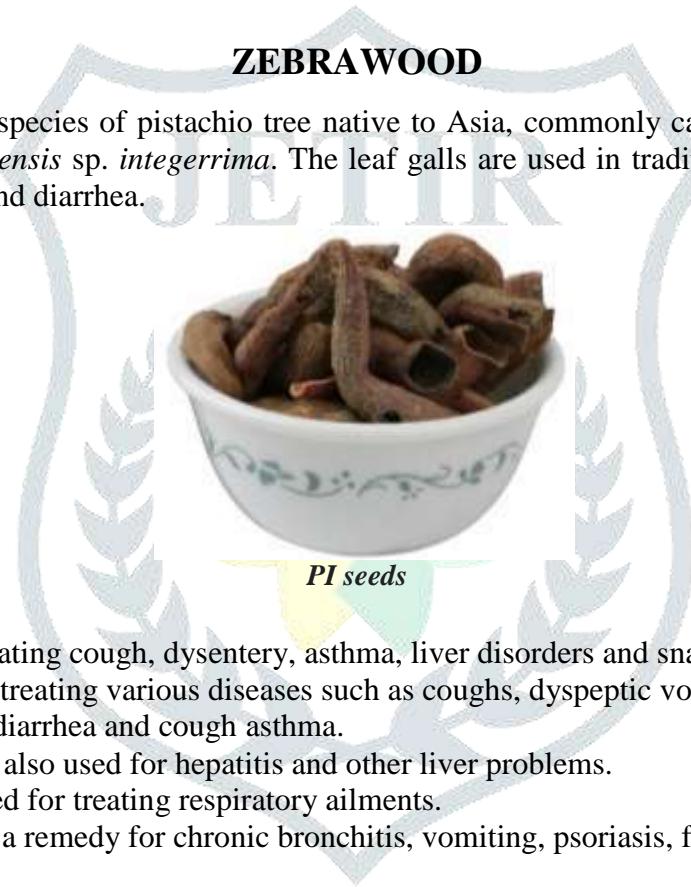
THERAPEUTIC INDICATIONS

Vasaka is helpful in following diseases. [16]

1. Cough (with yellow-thick sputum and fever)
2. Chronic cough due to Tuberculosis along with anti-tubercular medicines
3. Asthma (wheezing, breathing trouble and chest congestion)
4. Upper respiratory infections (with a fever and productive cough)
5. Common cold (with thick yellow discharge or along with secondary bacterial infection)
6. Chronic Bronchitis
7. Sinusitis
8. Sore throat
9. Throat pain
10. Throat Irritation
11. Tonsillitis (swelling or inflammation of tonsils with redness)
12. Throat ulcers
13. Excessive thirst
14. Nosebleed (epistaxis) – due to excess heat

ZEBRAWOOD

Pistacia integerrima is a species of pistachio tree native to Asia, commonly called **zebrawood**. It is often classified as *Pistacia chinensis* sp. *integerrima*. The leaf galls are used in traditional herbalism for cough, asthma, fever, vomiting, and diarrhea.



MEDICINAL USES

- Galls are used for treating cough, dysentery, asthma, liver disorders and snake bites.
- The plant is used for treating various diseases such as coughs, dyspeptic vomiting, appetite, dysentery and asthma. Also in diarrhea and cough asthma.
- In Pakistan, galls are also used for hepatitis and other liver problems.
- In India, galls are used for treating respiratory ailments.
- In India, it is used as a remedy for chronic bronchitis, vomiting, psoriasis, fever and promotes appetite. [20,21]

MYROBALAN (HARAD)

Harad is an Indian herb which is commonly known as Harade in India and has multiple Ayurvedic health benefits.



T. chebula dried fruit & crushed fruit

Prized as the “ **King of Medicines**”, Haritaki is a miraculous ayurvedic fruit that is extensively used for a wide range of traditional remedies.

BENEFITS OF HARAD

1. Aids in Digestion

This is due to its appetizer and digestive properties. Moreover, Harad also has laxative property that can aid in constipation. [22]

2. Constipation

Harad helps manage constipation if it is made a paste and taken at night due to its laxative property.

3. Cough and cold

It is good for preventing cough and cold naturally due to cough balancing property.

4. Weak Immunity

Harad improves immunity and increases longevity due to its rejuvenating property.

BASTARD MYROBALAN (BAHERA)

Terminalia bellirica, known as **bahera** or **bastard myrobalan**, is a large deciduous tree common on plains and lower hills in Southeast Asia, where it is also grown as an avenue tree. [23]



Bahera Fruit

USES

Bahera is used for the treatment, control, prevention, & improvement of the following diseases, conditions and symptoms: [24] [131]

- Pain
- Cough
- Indigestion, asthma, sore throat
- Wound healing & Skin irritations, Ulcers
- Heart problems
- Inflammation of liver
- Constipation

OVER DOSAGE OF BAHERA

- Do not use more than prescribed dose. They may cause poisoning or serious side-effects.
- Do not give medicines to other animal even if you know that they have the same condition or it seems that they may have similar conditions. This may lead to overdosage.
- Please consult to the veterinarian or product package for more information. [24]

GILOY

Tinospora cordifolia, which is known by the common names **gurjo**, **heart-leaved moonseed**, **guduchi**, and **giloy**, is an herbaceous vine of the family Menispermaceae indigenous to tropical regions of the Indian subcontinent [25].



Tinospora cordifolia stem

WHAT IT DOES?

Guduchi stem is **bitter** in taste and warming in action, and is a rejuvenating tonic for good health and longevity. It has strong anti-toxin and anti-inflammatory properties, reduces mucus, protects the liver and has a calming, stabilizing effect on the nervous system. [26]

HOW DOES IT WORK?

Tinospora cordifolia contains many different chemicals that might affect the body. Some of these chemicals have antioxidant effects. Others might increase the activity of the body's immune system. Some chemicals might have activity against cancer cells in test animals. Most research has been done in test tubes or in animals. [27]

BAEL

Aegle marmelos, commonly known as **bael**, also **golden apple**, [28] is a species of tree native to the Indian subcontinent and Southeast Asia.



A ripe Bael Fruit

USES

- **As Food**

The fruits can be eaten either fresh from trees or after being dried^[29] and produced into candy, toffee, pulp powder or nectar^[30]. If fresh, the juice is strained and sweetened to make a drink. It can be made into sharbat, also called as **Bela pana**.

Bela Pana made in Odisha has fresh cheese, milk, water, fruit pulp, sugar, crushed black pepper, and ice. **Bael pana**, a drink made of the pulp with water, sugar, and citron juice, is mixed, left to stand a few hours, strained, and put on ice. Bael fruits are of dietary use and the fruit pulp is used to prepare delicacies like murabba, puddings and juices.



Bael Fruit

- **As Traditional Medicine**

The leaves, bark, roots, fruits, and seeds are used in traditional medicine to treat various illnesses.^[30]

- **As Religious Belief**

Bael is used in the ritual rites of Hindus^{[31][32]}. Bael is considered as one of the sacred trees of Hindus.^[33] It is believed that Hindu deity Lord Shiva is fond of Bael trees and its leaves and fruit still play a main role in his worship.^[34]

KANTAKARI

Solanum virginianum, also called **yellow-fruit nightshade**, is also known as Indian night shade or yellow berried night shade plant, the common name is Kantakari. It is also a medicinal plant used mostly in India. Some part of the plant is poisonous ex. the fruit which is poisonous.^[35]



PARTS USED

Whole plant, fruits, seeds, stems, flowers, leaves and roots.^[36]

MEDICINAL USES

As anti-asthmatic, astringent, digestive, diuretic, pungent, carminative, anti-emetic and expectorant.

Whole plant used in bronchitis, cough, constipation and in dropsy, decoction used in gonorrhoea and promotes conception.

Root: useful in catarrhal affections, pain in the chest.

Fruits, flowers and stem: prescribed in vesicular and watery eruption, juice of the berries beneficial in sore-throat.

Leaves: juice with black pepper given in rheumatism.^[36]

BENAFSHA

Viola odorata is a species of flowering plant in the viola family, native to Europe and Asia. This small hardy herbaceous perennial is commonly known as **wood violet** or **sweet violet**. It has been introduced into North America and Australia.^[37,38]



Benafsha Plant Parts

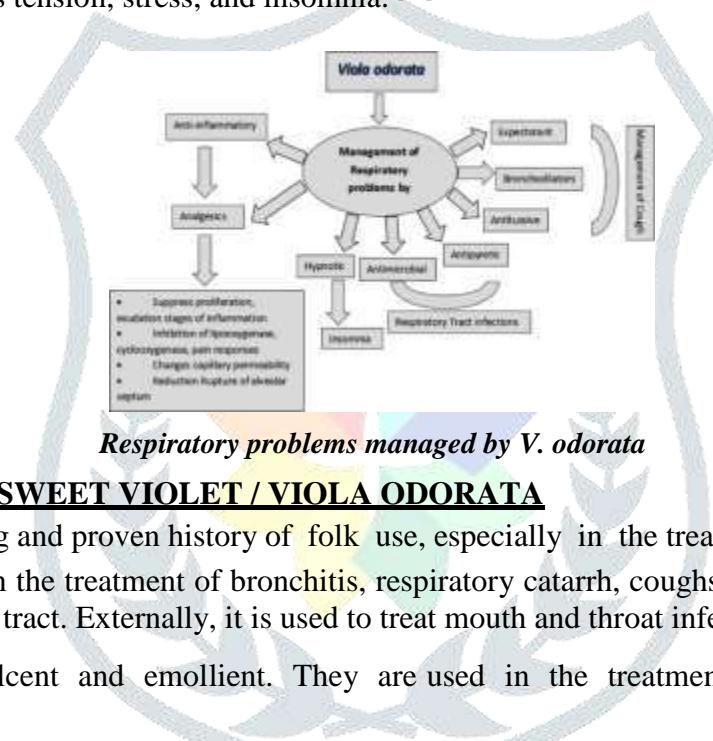
used : Whole plant, roots, fruits, flower^[39]

CHARACTERISTICS

- the flowers are scented
- the flowers are normally either dark violet or white
- the leaves and flowers are all in a basal rosette
- the style is hooked
- the leaf-stalks have hairs which point downwards
- the plant spreads with stolon's

BENEFITS

1. It cleanses the blood, the liver, kidney, and lungs.
2. It loosens the phlegm.
3. It reduces heat inside the animal body.
4. It gives relief in congestion of lungs, cold, cough, difficulty breathing, fever, bronchitis, and another cough-related respiratory ailment.
5. It helps in sore throat and swollen glands.
6. It is given in case of ear discharge since birth.
7. It reduces nervous tension, stress, and insomnia. [40]



MEDICINAL USE OF SWEET VIOLET / VIOLA ODORATA

- 1) Sweet violet has a long and proven history of folk use, especially in the treatment of whooping cough.
- 2) It is taken internally in the treatment of bronchitis, respiratory catarrh, coughs, asthma, and cancer of the breast, lungs or digestive tract. Externally, it is used to treat mouth and throat infections.
- 3) The flowers are demulcent and emollient. They are used in the treatment of biliousness and lung troubles.
- 4) The roots is a much stronger expectorant than other parts of the plant but they also contain the alkaloid violine which at higher doses is strongly emetic and purgative.
- 5) The seeds are diuretic and purgative. A homeopathic remedy is made from the whole fresh plant. An essential oil from the flowers is used in aromatherapy in the treatment of bronchial complaints, exhaustion and skin complaints. [41]

MEDICINAL PROPERTIES

Viola odorata is rich in medicinal properties. The understanding of these properties will help us to better utilize this herb. These also indicate the conditions in which we should avoid it. [41]
Below is given medicinal properties along with the meaning.

- **Alterative:** Alter favourably the course of an ailment.
- **Analgesic:** Acting to relieve pain.
- **Anti-asthmatic:** Treat or prevent asthma attacks.
- **Anti-catarrhal:** Remove excess mucus from the body
- **Anti-inflammatory:** Reducing inflammation by acting on body mechanisms.
- **Antipyretic/antifebrile/febrifuge:** Effective against fever.
- **Decongestant:** Used to relieve nasal congestion.
- **Depurative:** Purifying agent.

- **Diaphoretic:** Promote sweating.
- **Expectorant:** Promotes the secretion of sputum by the air passages, used to treat coughs.
- **Sedative:** Promoting calm or inducing sleep.

SIDE EFFECTS

- It may cause stomach upset
- High doses may cause nausea and vomiting.

BHARANGI

Bharangi is one of the common herbs used in the treatment of common cold, chronic sinusitis, allergic rhinitis, cough and other chronic respiratory problems. It is also an excellent dry cough home remedy. It is also used by Ayurveda for relief from fever and hyper-pyrexia.



Bharangi Plant

DESCRIPTION OF THE ROOT

S.No	Description part	Identifications
1	Shape	Woody, cylindrical.
2	Size	30cm long, 2-3 cm wide at the upper end
3	Colour	Earthy brown in colour
4	Surface	Longitudinally wrinkled, furrowed and ridged. T.S showed dark round bark.
5	Fracture	Root breaks with difficulty and fracture is short and starchy.
6	Odor and Taste	Hardly perceptible odour and slightly acrid taste



Bharangi roots

THERAPEUTIC USES

- Root is useful in asthma & cough.
- It is given in fever and is useful in sinusitis.
- The plant is considered as antitoxic, antiseptic and astringent.
- Root is pungent, bitter, acrid, dry, heating, anti-inflammatory, digestive, carminative, depurative, expectorant, antispasmodic, stimulant, appetizer and anthelmintic. It is used clinically in treatment of bronchitis, asthma, fevers, blood disease, tumours, inflammations, ulcer and wounds.

- Leaves are used in fever and hiccough. [42]

CINNAMON

Cinnamomum zeylanicum is one of the oldest herbal medicines known, having been mentioned in Chinese texts as long as 4,000 years ago. It is often used for medicinal purposes due to its unique properties.

Cinnamon popularly known as Dalchini (*Cinnamomum zeylanicum*), belongs to the Family Lauraceae. The main part of its tree which is used for the spice purpose is its bark.



Cinnamon Bark & powder

USEFUL PARTS OF THE PLANT

The most useful part of the cinnamon tree is the **outer bark** which is generally used as a spice and for several natural medicinal applications. The **inner bark** of the cinnamon tree has more medicinal effects and also contains more essential oil. The cinnamon bark spice is known to be available throughout the year and is most ideal to be consumed as a tea especially during winter as it has a warm and sweet taste and is also very aromatic. [43]

The essential oil of this herb acts as potent antibacterial, anti-fungal, and uterine stimulant. [43]

Parts used: Cinnamon oil, Cinnamon Powder, Stem bark

AYURVEDIC USES AND BENEFITS OF CINNAMON

- In Ayurvedic medicine Cinnamon. It is also used for toothache and sore gums.
- Ayurvedic makes use of Cinnamon for the respiratory tract and urinary problems.
- It is a good addition to tea for coughs and colds and is sometimes used in steam inhalations for respiratory conditions.

MEDICINAL USES

Cinnamon is the best spice available in terms of its nutrition and health. The health benefits may also come from eating Cinnamon. Those are:

- Headaches and migraine:** Headache due to the exposure to cold wind is readily cured by applying a thin paste of powdered cinnamon mixed in water on the forehead.
- Reduces blood sugar levels** and treating Type 2 Diabetes [44], [45], [46]. By taking as little as ½ teaspoon of cinnamon per day it can improves the insulin resistance and it can help in weight control.
- Itching:** Paste of honey and cinnamon is often used to treat insect bites.
- Fights Cancer:** Cinnamon reduced the proliferation of leukaemia^[47] and lymphoma cancer cells. Due to the presence of calcium and fibre in cinnamon which can help to remove bile, which prevents damage to colon cells, thus prevents colon cancer^[48,49].
- Cures Respiratory Problems:** Cinnamon is very useful home remedy for common or severe colds. It will cure most chronic cough, cold and clear the sinuses.
- Birth Control:** Cinnamon also helps in natural birth control. Regular consumption of cinnamon after child birth delays menstruation and thus helps in avoiding conception.
- Infections:** Due to its antifungal antibacterial^[50-52], antiviral, antiparasitic and antiseptic properties it is effective in fighting oral yeast infections and stomach ulcers and head lice.

8. Natural Food Preserver: When added to food, it prevents bacterial growth and food spoilage, making it a natural food preservative.

9. Reduces Urinary tract infections: People who eat cinnamon on a regular basis report a lower incidence of urinary tract infections. Cinnamon is diuretic in nature and helps in secretion and discharge of urine.

10. Anti-clotting Actions: The Cinnamaldehyde in cinnamon helps prevent unwanted clumping of blood platelets.

BLACK PEPPER

Piper nigrum (family Piperaceae) is a valuable medicinal plant. It is one of the most commonly used spices and considered as "The King of spices" among various spices. Black pepper is grown in many tropical regions like Brazil, Indonesia and India. Piper nigrum is commonly known as Kali Mirch in Urdu and Hindi, White pepper, Green pepper, Black pepper, Madagascar pepper in English.



Pepper Seeds & Seed Powder

It is widely used in different traditional systems of medicine like Ayurvedic and Unani System of medicines^[53].

BENEFITS OF BLACK PEPPER

There are plenty of benefits surrounding this spice and there is a reason why our ancestors had named it the 'King of Spice'.

1. Good for Digestion

Black pepper helps in good digestion and when it is consumed raw, hydrochloric acid is released by the stomach and helps in breaking down the proteins. So don't forget to add a pinch of black pepper to all of your food.^[54]

2. Aids In Treating Respiratory Diseases:

Cold and cough are said to be normal respiratory problems that can be cured by consuming black pepper. Adding black pepper to some warm water along with some eucalyptus oil in it and inhaling the steam is a simple remedy of getting rid of chest congestion. ^[54]

3. Prevents Constipation

If there is less than three stools a week, then animal may be suffering from constipation. However, this problem can be solved by adding some pepper to their food daily. Sometimes when they may be suffering from constipation, one may end up straining to pass stools or sometimes may not feel empty even after passing stools.

Excessive consumption can be harmful to them, so make sure, just add a pinch of it in daily fodder. ^[54]

TURMERIC

Turmeric is a flowering plant, *Curcuma longa* of the ginger family, Zingiberaceae, the roots of which are used in cooking. Plants are gathered each year for their rhizomes, some for propagation in the following season and some for consumption.^[55]



Turmeric powder

The rhizomes are used fresh or boiled in water and dried, after which they are ground into a deep orange-yellow powder commonly used as a coloring and flavouring agent in many Asian cuisines, especially for curries, as well as for dyeing.

USES

- **As Food**

Turmeric rhizomes are used as a bright yellow-orange culinary spice.

Turmeric is a main ingredient of curry powder. The rhizomes are cooked, dried and then ground to produce the strongly coloured, aromatic powder. Ground rhizomes are used to make turmeric oil that is used in the industrial production of flavouring for curries. Turmeric was often hung in kitchens as a good luck charm, and a small rhizome was sometimes tied to the pots in the kitchen for luck.^[56]

- **In Dyes**

Turmeric rhizomes yield a bright yellow dye that is used as a colouring for foods, textiles, paints and even people! Its primary use is in crafts as a fabric dye. Now synthetic dyes tend to be used instead, but these can be harmful to the skin. Making natural dyes from plants like turmeric may be safer, although this cannot always be assumed to be true. ^[56]

- **Cultural/ spiritual uses**

Yellow and yellow-orange are colours that have sacred and auspicious connotations on the Indian subcontinent. Turmeric is important in Hindu and Buddhist ceremonies.



Yellow and orange are both special colours in Hinduism, yellow being associated with Vishnu, and as the colour of the space between chastity and sensuality. Orange signifies sacrifice, renunciation and courage. Originally associated with the sun as part of solar symbolism, the colours were absorbed into the mythology of Hinduism.

The use of turmeric is prohibited in a house of mourning. ^[56]

- **As Traditional Medicine**

The rhizome is the part that is most widely used. It can be prepared in various ways and is reputed to alleviate **asthma and coughs**.

In Unani medicine, turmeric has been used for conditions such as liver obstruction and jaundice and has been applied externally for ulcers and inflammation.

Hot water extracts of the dried rhizome have been taken orally in Ayurvedic medicine to reduce inflammation. Turmeric is also regarded as a 'rasayana' herb, which is a branch of Ayurvedic medicine. Inhalation of turmeric smoke is reputed to relieve hiccups.

- **Cosmetics**

Extracts have been added to creams as a colouring agent, and traditionally women would rub turmeric into their cheeks to produce a golden glow.

In Hindu wedding ceremonies, brides would rub turmeric over their bodies. In India pieces of the rhizomes

are added to water to make an infusion used in baths. [56]

- **Other uses**

An unusual use for turmeric is in the chemistry laboratory. Turmeric goes dark red in the presence of alkaline (basic) substances, such as baking powder. Strips of paper soaked in turmeric can therefore be used as an indicator. Turmeric is used in the laboratory alongside litmus paper, which turns blue in the presence of bases and red in the presence of acids. [56]

ELECTUARY

Any preparation of a medicine mixed with honey or similar in order to make it more palatable to swallow. A medicine composed of powders, or other ingredients, incorporated with some conserve, honey, or syrup.

Electuaries are similar, but take even less time to make and can make some of the most pungent tasting herbs palatable. By definition, an electuary is a powdered herb mixed with raw. The texture can vary from more like a syrup (less herb in proportion to honey) or like a thick paste that can even be rolled into pills or lozenges^[57].

Electuary used in ayurvedic dosage form have lesser side-effects than other dosage forms. Also they are easy to use as they can be simply mixed in the fodder or the food given to the diseased animals.

Types of Electuary:

- **Chamomile Electuary**– Powdered chamomile with honey.
- **Golden Milk Electuary**– All the benefits of Turmeric Tea Golden Milk in a non-perishable form. It helps speed recovery from illness.
- **Pregnancy Electuary**– Pregnancy tea in tasty electuary form.
- **Vitamin C Electuary**– This can be eaten by the spoonful or formed into little pills or lozenges.
- **Echinacea Electuary**– The easiest way to take Echinacea, which can have a pungent taste.
- **Sore Throat Electuary**– They are great for easing the pain of a sore throat.
- **Ginger-Mint Electuary**– It is used in stomach aches^[58].

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