



A Review on Herbal Antitussives and Expectorants Plants

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ABSTRACT

The mechanisms of actions of cough medicines are not always known. The problem is exacerbated for herbal medicines, where the effectiveness of the plant or its phytochemicals have rarely been carefully evaluated.² use of heral drug is increasing all over the world for various ailments including antitussive and expectorant activity as they are safe and deviod of aderse effect. medicinal plants are an important source for the discovery of novel bioactive compound. 16 Herbal formulation composed of multi components which produce synergistic effect apart from boost up of natural immunity. Herbal cough syrup was prepared by mixing of extracts from different plants. 18 This review descibes current sittutaion of plants used as expectorant and antitussive .1

Keywords: Anti-tussive Activity, Expectorant Activity, Herbal Plants, Cough, Liquorice , Sweet Flag

INTRODUCTION

A productive cough helps clear mucus (sputum) and foreign material from the airways. Mucus may be made in the lungs because of bronchitis, pneumonia, or chronic obstructive pulmonary disease (COPD). Colds and allergies may produce mucus that drains down the back of the throat (post-nasal drainage).Pathology. Productive cough in chronic bronchitis is secondary to excessive mucus secretions in the airways. Mucus is present in excessive amounts owing to the overproduction and hypersecretion of mucus from mucus-producing goblet cells and decreased airway clearance mechanism.

Herbal drugs in crude form or in polyherbal formulations for the treatment of cough are better alternatives of modern cough drugs. Decoctions or infusions of different parts of the plants studied are used individually or in combinations to cure cough , sore throat, bronchitis, asthma, and other respirator tract problems. 17

Liquorice has been used in both chinese and western medicine for respiratory problems , including allergies , cold , cough , sore thorat , bronchitis , asthma and TB .19

An expectorant is a type of cough medicine used to help clear mucus (phlegm) from your airway. You may take an expectorant to help relieve congestion if you have a cold or the flu.

Expectorants are available as standalone drugs or as an ingredient in an all-in-one cold or flu medication.Expectorants reduce the thickness of mucus and make secretions in the airways thinner. By loosening up the mucus in these ways, expectorants make it easier for a person to cough up phlegm and clear out their throat

Different cold and flu symptoms require treatment with different types of drugs. A person with a productive cough can take an expectorant, but a dry or tickly cough usually requires a cough suppressant. Many OTC products contain a decongestant, but these are only effective for treating nasal congestion.All-in-one cough, cold, and flu products may contain a combination of these ingredients. People who take all-in-one products are at risk of taking medicines that they do not need, and this can increase the likelihood of side effects.

Natural expectorants and cough remedies include various herbs and other natural substances that help clear your airways. Other natural treatments help soothe symptoms caused by inflammation of the upper airways. When infected or irritated by a cough or sore throat, the cells in your throat or upper airway triggers your immune system to help fight back . You can get relief from the symptoms by working to reduce the inflammation.

Plant having ANTI-TUSSIVE Activity:-

1.) Acorus calamus L.(Sweet flag) 1,10



Synonyms :-

Sweet Flag, Calamus ,Bach Vaj 4

Biological Source -

Calamus consists of dried rhizomes of *Acorus calamus* Linn., belonging to family Araceae . 8,4

Cultivation

Sweet flag comes with all types of soil with sufficient moisture . This can also e grown in waterlogged soils.tropical to subtropical cliamte is sitiabile for this crop.such field is irrigated and tilled with green mannure before planting . The rhizome along with bud. The cut pieces of rhizome with bud is planted in the fine sand mixed soil at 0.3 m apart . The crop is weeded once every month from the first four to five month 11.

Characteristics –

It is a semiaquatic perennial plant. The plant grows from 60 to 100 cm tall. The stem is triangular and sprouts from a horizontal, round rootstock, which has the thickness of a thumb. The leaves are yellowish-green, 2 to 3 feet in length, oblong, sword-shaped, tapering into a long, acute point, often undulate on the margins and arranged in two rows. The rhizome has an intensely aromatic fragrance and a tangy, pungent and bitter taste. The flowers are small dice -shaped, slim, conical spadix, greenish in colour appear from May to July. Fruits are berries, full of mucus, which falls when ripe into the water or to the ground. Rhizomes are about 20 cm long, 1 to 2 cm in diameter, either peeled or unpeeled, reddish grey in colour, soft, porous, with longitudinal furrows. On the lower surface there are small root scars which are slightly raised. 4,12



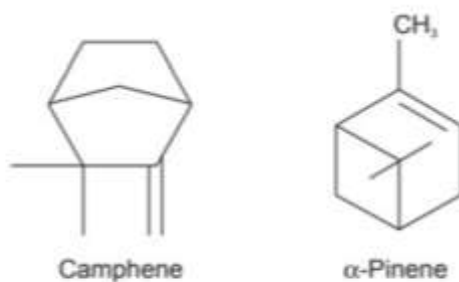
Acorus calamus

Chemical Constituents -

The dried rhizome contains about 1.5–2.7% of a neutral, yellow, aromatic, essential oil. The fresh aerial parts yield about 0.12% of the volatile oil, whereas the unpeeled roots yield the maximum of

1.5–3.5%. The constituents present in calamus are acorin a volatile essential oil, amorphous, which is semifluid, resinous, neutral in reaction, bitter and aromatic, and soluble in alcohol, chloroform and ether; acoretin or choline is a bitter principle with resinous nature; a crystalline alkaloid soluble in alcohol and chloroform, Calamine; along with other constituents like bitter glucoside, starch, mucilage and traces of tannin. The volatile oil is yellowish-

brown in colour and is composed of asaryl aldehyde, heptylic and palmitic acid, eugenol, esters of acetic and palmitic acids, pinene, camphene, sesquiterpene, calamene and a small quantity of phenol, methyl eugenol, cilamemenol, and calameone. 8,4



Uses

Uses-

Calamus is an aromatic, bitter stomachic, carminative, appe -tizer, digestive, spasmolytic, stomach tonic, nervine sedative, and antiperiodic. The volatile oil is aromatic, expectorant and antiseptic, as a flavouring agent, in perfumery. The dried root and rhizomes are chewed to relieve dyspepsia, bronchitis and also chewed to clear the voice. ,4

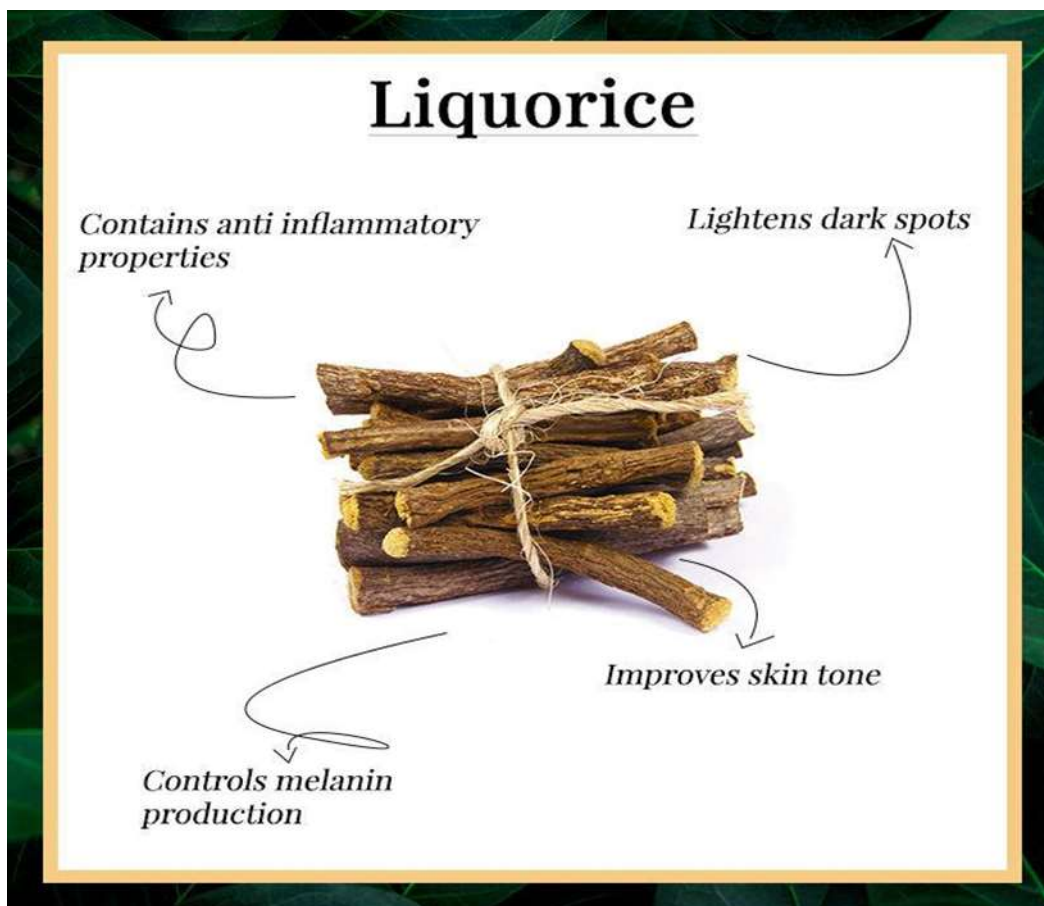
PROPERTIES OF CAMPHENE :- 9,14

Chemical formula	C ₁₀ H ₁₆
Molar mass	136.238 g·mol ⁻¹
Melting point	51 to 52 °C (124 to 126 °F; 324 to 325 K)
Appearance	white or colorless solid

Plant having EXPECTORANT Activity:-

2.) Glycyrrhiza glabra Linn.

(Liquorice) 1,4,5,6,



Synonyms -

Radix Glycyrrhizae, Sweet licorice.4

Biological Source -

Liquorice consists of subterranean peeled and unpeeled stolons, roots and subterranean stems of *Glycyrrhiza glabra* Linn, and other species of *Glycyrrhiza*, belonging to family Leguminosae.e. 4

Geographical Source-

It is mainly found in China, Europe, India, Iraq, Japan, Kurdistan, Spain, Turkey, and the United States.

Characteristics-

Liquorice root is in long, straight, nearly cylindrical, unpeeled pieces, several feet in length, varying in thickness from 1/4 inch to about 1 inch, longitudinally wrinkled, externally greyish brown to dark brown, warty; internally tawny yellow; pliable, tough; texture coarsely fibrous; bark rather thick; wood porous, but dense, in narrow wedges; taste sweet, very slightly acid. The underground stem which is often present has a similar appearance, but contains thin pith. When peeled, the pieces of root (including runners) are shorter, a pale yellow, slightly fibrous externally, and exhibit no trace of the small dark buds seen on the unpeeled runners here and there. Otherwise it resembles the unpeeled. 13

Cultivation and Collection-

Liquorice is often cultivated for its edible root which is widely used in medicine and as flavouring. The plant requires a deep well cultivated fertile moisture -retentive soil for good root production. Prefers a sandy soil with abundant moisture and does not flourish in clay. Slightly alkaline conditions produce the best plants. The plant thrives in a maritime climate. It is propagated using seeds and roots. The seeds are presoaked for 24 h in warm water and then sown in spring or autumn in a greenhouse. The seedlings are individually potted when they are large enough to handle, and grown them for their first winter in a green house. They are transplanted in late spring or early summer when in active growth. Plants are rather slow to grow from seed. The plant parts are procured from old plantations, being waste from the harvesting process, consisting of those side roots or runners which have eyes or buds,

cut into sections about 6 inches long. They are dibbled in rows 3 or 4 feet apart, about 4 inches underneath the surface and about 18 inches apart in the rows. In the autumn, the ground is dressed with farmyard manure, about 40 tons to the acre. Plants are slow to settle in and do not produce much growth in their first two years after being moved. The young growth is also very susceptible to damage by slugs and so the plant will require some protection for its first few years. This species has a symbiotic relationship with certain soil bacteria; these bacteria form nodules on the roots and fix atmospheric nitrogen. Some of this nitrogen is utilized by the growing plant but some can also be used by other plants growing nearby.

Harvesting generally occurs in the autumn of the fourth year. The soil is carefully removed from the space between the rows to a depth of 2 or 3 feet as required, thus exposing the roots and rhizomes at the side, the whole being then removed bodily. The earth from the next space is then removed and thrown into the trench thus formed and these operations are repeated continuously

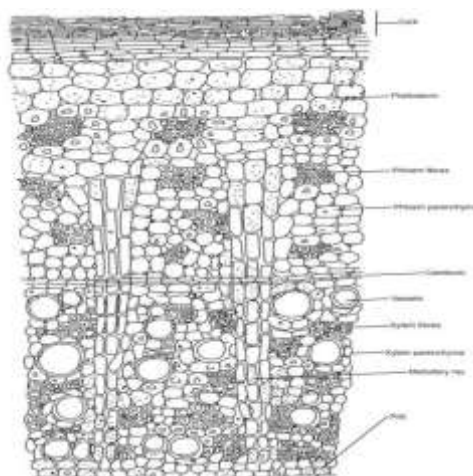
Every portion of the subterranean part of the plant is carefully saved; the drug consists of both runners and roots, the former constituting the major part. The roots are properly washed, trimmed and sorted, and either sold in their entire state or cut into shorter lengths and dried, in the latter case the cortical layer being sometimes removed by scraping. The older or 'hard' runners are sorted out and sold separately; the young, called 'soft,' are reserved for propagation. 4



Root and twig of *Glycyrrhiza glabra*

Microscopy -

Cork consists of several rows of radially arranged thin walled tubular cells. Phelloderm is composed of parenchymatous and sometimes collenchymatous cells. Starch grains and calcium oxalate crystals are seen in phelloderm. Pericyclic fibres are found in groups. Phloem consists of sieve tissue alternating with thick walled, lignified fibres surrounded by a sheath of parenchymatous cells containing prisms of calcium oxalate. Xylem vessels and xylem parenchyma are present. Medullary rays are radially elongated. Pith is present in rhizomes and absent in root. 4

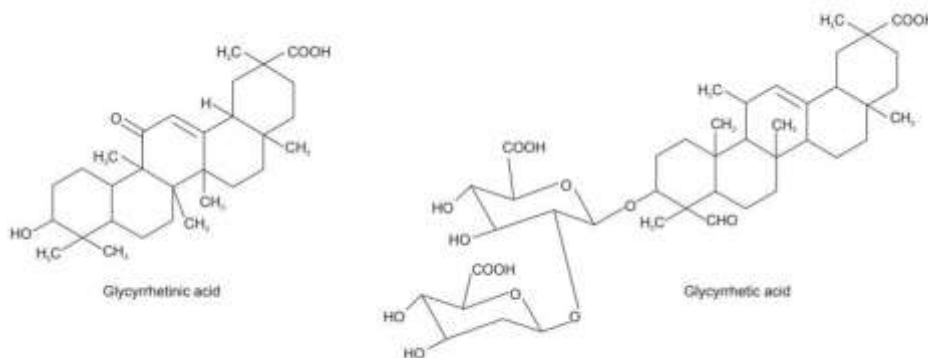


Transverse section of Liquorice stolon

Chemical Constituents -

The chief constituent of liquorice root is Glycyrrhizin (6–8%), obtainable in the form of a sweet, which is 50 times sweeter than sucrose, white crystalline powder, con-sisting of the calcium and potassium salts of glycyrrhizic acid. Glycyrrhizic acid on hydrolysis yields glycyrrhetic or glycyrrhetic acid.

Glycyrrhizic acid is a triterpenoid saponin having α -amyrine structure. It shows especially in alkaline solution frothing but it has very weak haemolytic property. The yellow colour of the drug is due to chalcone glycoside isoliquiritin. The drug also contains sugar, starch (29%), gum, protein, fat (0.8%), resin, asparagin (2–4%), a trace of tannin in the outer bark of the root, yellow colouring matter, and 0.03% of volatile oil. 14



Chemical Test-

When 80% sulphuric acid is added to a section or powder of the drug orange yellow colour is produced due to transformation of flavone glycoside liquiritin to chalcone glycoside isoliquiritin.¹⁴

Uses-

Glycyrrhiza is widely used as a sweetening agent and in bronchial problems such as catarrh, bronchitis, cold, flu and coughs. It reduces irritation of the throat and yet has an expectorant action. It produces its demulcent and expectorant effects. It is used in relieving stress. It is a potent healing agent for tuberculosis, where its effects have been compared to hydrocortisone. Glycyrrhiza is also effective in helping to reduce fevers (glycyrrhetic acid has an effect like aspirin), and it may have an antibacterial action as well. It is used in the treatment of chronic inflammations such as arthritis and rheumatic diseases, chronic skin conditions, and autoimmune diseases in general. It should be used in moderation and should not be prescribed for pregnant women or people with high blood pressure, kidney disease or taking digoxin-based medication. Prolonged usage raises the blood pressure and causes water retention. Externally, the root is used in the treatment of herpes, eczema and shingles 4.

PROPERTIES OF GLYCYRRHETIC ACID 15

Chemical formula	C ₄₂ H ₆₂ O ₁₆
Molar mass	822.942 g·mol ⁻¹
Melting point	588.3 °C
Appearance	soft, fibrous, and flexible and are coloured bright yellow inside.

Conclusion -

On this Review literature work we have discussed about cultivation, collection, preservation and storage of only a few medicinal plant, but there are more medicinal plant grow in our country. Medicinal herbs can be a good alternative for many diseases and conditions. If we do proper management and cultivation of medicinal plant, our country will be developed in herbal medicine and many people will be benefited by medicinal as use it medicine.

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