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PLANTS POSSESSING ANTI-ASTHMATIC POTENTIALS: A SYSTEMATIC REVIEW

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ABSTRACT:
Asthma is generally a long-standing inflammation of airways. This constantly recurring inflammation is basically analogous to airways with hyper-activity i.e, overemphasized airways. The review paper was based on the plants possessing anti-asthmatic potentials with the aim of centralizing the ailment of asthma. The literature was extensively searched through various scientific and reputed platforms i.e., Scopus, PubMed, Google scholar etc. The asthma has become the most common ailment; and is spreading at a very rapid pace. Almost, most of the population has become engrossed in this disease. So, the motto of this paper is to decipher more information regarding the asthma as well as focusing on the utilization of more and more herbal products in place of synthetic medications. It deals with complete study about plants like *Grewia asiatica, Dactylorhiza hatagirea, Lilium candidum, Lilium Polyphyllum* possessing anti-asthmatic properties. It laid upon the isolation of active chemical constituents from such plants and recognizing the key element that possess the pharmacological activity of anti-asthmatic agent. It suggests for future researchers as a boon targeting their research in the cognizance of recognizing the treatment for asthma.
Keywords: asthma, anti-asthmatic, *Grewia asiatica, Dactylorhiza hatagirea, Lilium candidum, Lilium polyphyllum*

INTRODUCTION

Asthma is an outcome of persistent inflammation of airways. This constantly recurring inflammation is basically analogous to airways with hyper-activity i.e., overemphasized airways resulting in tapered response to a particular triggering means to a same degree like allergens, virus-response, intense physical workout, etc. that ultimately results in the reiterative interlude of gasp, short-winded, acute myocardial infarction or whoops that tends to owe variations with respect to time and also the potency. Symptomatic incidents are

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generally confined with extensive spread with the hurdles dealing with airflow-pattern inside the lungs, these are basically of adaptable nature either occurring instantly or treated with bronchodilators that are fast acting in response [1].

Asthma has become the most common ailment; and is spreading at a very rapid pace. Almost, most of the population has become engrossed in this disease. So, the motto of this PAPER is to decipher more information regarding the asthma as well as focusing on the utilization of more and more herbal products in place of synthetic medications. This article deals with complete study about plants like *Grewia asiatica, Dactylorhiza hatagirea, Lilium candidum, Lilium polyphyllum* having anti-asthmatic properties. Respiratory allergies comprise of susceptible rose-cold, and hypersensitive asthma-ailment that always produces gasp, whoops, short-breath, sniffle, and certain other difficult situations that are related to sinus and several other manifestations are also encompassed and comprises blunt-red, blubbering-eyes, with fluent tickle. Asthma a hypersensitivity of airways due to inflammation which is visualized with the occurring of events like coughing-cold, with varied-breath. The Institute of National Health elaborates the ailment of asthma as a long-standing inflammation of airways that encompasses several biological-elements, that tends to decipher a important role with prominent action which comprises of dendritic cells, red blood-cells scavenging cells, protective cells, etc. the reiterative events of asthma vary from normal to persistently severe conditions that arises as a response of overactivity of certain allergic-substances. This may also result in instance of death due to severe attacks of asthma-ailment [2].

Types of asthma [3]

The Program of Education and Prevention of Asthma-ailment at National level categorized this disease in various types, these are as follows:

i. Intermittent-asthma
ii. Mild persistent-asthma
iii. Moderate persistent-asthma
iv. Severe persistent-asthma

Intermittent-asthma – if without any treatment any one of the factors given below prevails then it must be true, then the asthma is as intermittent-asthma.

Traits: difficulty in breathing, cardiovascular related problems, etc. Other traits encompass nocturnal events occurring like rise in body temperature, etc. The pathological test of estimating the functionality of lungs usually decipher the normal values at instance when the asthmatic-attack is absent.

Mild persistent-asthma – It is associated with the given factors:

In this type of asthma, the marks tend to occur on daily-basis and the medications like squat-acting inhalational medications are used regularly.

These traits interrupt the day-to-day activities.

The pathological test determining the functionality of lungs usually decipher the normal values at instance when the asthmatic-attack is not prevailing.

Moderate persistent-asthma– It is found to be persistently-moderate when in the absence of any treatment any of the following factors are found to be valid or considered to be true.

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The trait are founded to be associated with daily basis and are treated with the use of inhalational medications of asthma.
The trait tend to interrupt with the daily activities.
Lung function determination test are found to be normal.

Severely persistent-asthma – It is generally deciphered to be persistently severe if it does not prevail without treatment or and of the given points are found to be valid in such cases it is considered to be true. Nocturnal traits are very frequent.
Lung function test are found to exhibit abnormal results.

Causative-agents of ailment of asthma [4]

- Common triggering agents encompasses:
- Infections related with traits of cough-cold, flu, etc.
- Allergies due to plant related substances like pollen grains, dust-particles, fur-of-animals, feathers-of-animals, etc.
- Smoky-fumes and resultant of pollution.
- Medications deciphering the activities like anti-inflammatory (such as ibuprofen, aspirin)
- Emotions comprising of stress, laughter.
- Environmental changes such as sudden cold-air, wind, thunderstorms, heat, humidity
- Mould or damp
- Exercise
- Etc.

Traits of Asthma [5]

The sign and symptoms of Asthma-ailment comprises of the following key points:

- Shortness-of-breath
- Pain or chest-tightness
- Wheezing
- Troublesome sleep due to coughing, wheezing, shortness of breath
- Infection due to cold or flu virus.

Severe indications of Asthma:

Asthma that prevails due to severe exercise.
Asthma that prevails due to occupation.
Asthma that prevails due to allergy.

Diagnosis of ailment of asthma [6]

There are various tests designed to determine the ailment of asthma. These tests comprises of the following tests given below :

1. **The test-of-spirometry** – This diagnostic-test is basically designed to estimate the bronchial tube narrowness by estimating about the amount of air that has been exhaled after breathing deep.
2. **Peak-flow test** – This test includes a simple device , the aim of which is to measure how hardly one can breath.

Some additional tests are as follows:

- Methacholine challenge
- Imaging tests

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- Allergy testing
- The test of nitric-oxide
- Sputum eosinophils test
- Provocative testing or exercise as well as cold-induced Asthma

Treatment of Asthma-ailment [6]

Preventive measures with long-term control are generally considered as the key factors for controlling the ailment of asthma. It includes identification of the provoking agents, with further actions taken to avoid such triggers, medications, as well as certain stern excercises also.

Anti-asthmatic drugs – Drugs which are used in the treatment of asthma are known as ant-asthmatic drugs.

bronchodilators- β-adrenergic agonists, anticholinergics, methylxanthines.

Steroidal anti-inflammatory agents – corticosteroids, anti-leucotrienes.

There are several medicinal plants that are identified as capable of treating respiratory disorders. These herbs tend to relieve from convulsive bronchitis and bronchial asthma. These are caused due to continuous contraction of bronchial smooth muscles usually accompanied by mucosal oedema with increased secretions.

Herbal therapy for asthma [6]: The management of Asthma pharmacologically depends on use of Medicinal plants used in the treatment of Asthma are as follows:

- The leaves of the plant Abutilon-crispum are used as antiastmatic in the treatment of asthma.
- The seeds of the plant Abutilon indicum possess anti-asthmatic activity.
- The aerial parts of the plant Aerva. Lanata linn are found to exhibit anti-asthmatic activity.
- The leaves, roots, and stalk of the plant acalypha indica possess the activity of stabilizer of mast cell.
- The flowers of the plant Achillea. mellifolium tend to owe the action of broncho-dilator.
- The rhizomes of the plant Acorus. alamus are extensively used as mast-cell-stabilizer.
- The leaves of the plant Ailanthus excels are found to exhibit the action of mast cell stabilizer.
- The fruits of the plant achyranthes aspera are used as anti-asthmatic.
- The leaves of the plant ageratum Conyzoides possess ant-asthmatic activity.
- The bulb of the plant Badhatoda vasica. nees are used as mast-cell-stabilizer.
- The bark of the plant Albizzia. lebbeck are used as COX inhibitor.
- The leaves of the Asystasia-gangetica are used as broncho-dilator.
- The seeds of the plant Ammi-visnaga are used as mast-cell-stabilizer.
- The bark of the plant Amburana-cearensis are used as broncho-dilator.
- The leaves of the plant Allium cepa are used as anti-inflammatory.
- The leaves of the plant Alstonia-scholaris used as broncho-dilator.
- The stem of the plant Aquillaria-agallocha used as broncho-dilator.
- The stem of the plant Arstolochia indica are used as broncho-dilator.
- The roots of the plant Asclepias curassavica are extensively used as broncho-dilator.
- The leaves of the plant Asystasia gangetica are used as bronchodilator.
- The seeds of the plant Atropa bel-adonna tend to owe anti-asthmatic properties.
- The leaves of the plant Azadirachta indica are used as anti-asthmatic.

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- The leaves of the plant Azima.tetracantha used as mast-cell-stabilizer.
- The leaves of the plant Bacopa-monniera are used as mast-cell-stabilizer.
- The stem and bark of the plant Balanites-roxburghi are used as broncho-dilator.
- The fruits of the plant Benincasa-hispida are used as broncho-dilator.
- The root of the plant Boerhavia- diifusa are widely used as broncho-dilator.
- The seeds of the plant Brassica- camperstris are used as anti-asthmatic agents.
- The seeds of the plant Biophytum. nervifolium are used as broncho-dilator.
- The leaves of the plant Cassia absus are used as broncho-dilator.
- The bark of the plant Casuarina equisetofolia are found to exhibit anti-asthmatic properties.
- The wood of the plant Cedrus-deodara are used as mast-cell-stabilizer.
- The wood of the plant Cnidium-monniera are used as broncho-dilator.
- The wood of the plant Curculigo-orchiodes are used as anti-asthmatic.
- The tubers of the plant Centipeda-minima are used as anti-inflammatory.
- The stem of the plant Clerodendron-phlomidis are used as mast-cell-stabilizer.
- The leaves of the plant Casuarina.equistefolia linn are used as anti-histaminic.
- The roots of the plant Chlorophytum. laxum are used as anti-histaminic.
- The tuber of the plant Cissus quadrangularis possess anti-histaminic activity.
- The whole plant of Clematis-smilacifolia possess anti-asthmatic property.
- The latex of the plant Clerodendrum-serratum possess anti-asthmatic activity
- The seeds of the plant Coccinia-grandis possess anti-asthmatic property.
- The stem and bark of the plant Cynodont -dactylon used as anti-asthmatic.
- The roots of the plant Calotropis-procera used as anti-asthmatic
- The rhizome of the plant Cassia toral.inn are used as mast-cell-stabilizer.
- The rhizome of the plant Clerodendron-serratum possess mast-cell-stabilizer activity.
- The leaves of the plant Cuminum-cyminum used as broncho-dilator.
- The bark of the plant Curcurma-longa used as broncho-dilator.
- The roots of the plant cynodont-dactylon tends mast-cell-stabilizer action.
- The leaves of the plant Cassia-sophera used as anti-asthmatic.
- The bark of the plant Dendropthe-falcate used as anti-asthmatic.
- The roots of the plants Desmodium gangetium used in asthma .
- The whole plant of Dhatura-metel used as anti-asthmatic.
- The fruits of the plant Elaeocarpus used as broncho-dilator.
- The stem of the plant Ephedra used as broncho-dilator.
- The leaves of the plant Eclipta are used as anti-asthmatic.
- The fruits of the plants Emblica officinalis used as anti-asthmatic.
- The aerial parts of the plant Euphorbia used as anti-asthmatic.
- The bark of the plant Ficus-bengalensis used as anti-asthmatic.
- The root of the plant Ficus-exasperate are used as anti-asthmatic.
- The roots of the plant Glycyrrhiza glabra are found to exhibit anti-allergic activities.
- The roots of the plants Hemidesmus indica used as anti-asthmatic.
- The roots of the plants Innula racemose possess mast-cell-stabilizer.
- The leaves of the plant Labisia. pumila used as anti-asthmatic.

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- The leaves and roots of the plants Leptadenia.reticulata are used in the treatment of asthma.
- The seeds of the plants Lepidium.sativum are used as broncho-dilator.
- The whole plant of Lannea-coromandelica are used as anti-asthmatic.
- The leaves of the plant Leucas-aspera are used as anti-asthmatic.
- The seed and bark of the plant Mangifera-indica are used as anti-asthmatic.
- The leaves of the plant Manilkara-hexandra found its use as anti-asthmatic agents.
- The leaves of the plant Mimosa-pudica are used as anti-asthmatic.
- The leaves of the plant Mentha are used as mast-cell-stabilizer.
- The bulbs of the plants Momordica-diociaare used as mast-cell-stabilizer.
- The seeds of the plant moringa are used as mast-cell-stabilizer.
- The seed of the plant Mucuna-pruriens are used as anti-allergic.
- The stem and bark of the plant Myristica used as broncho-dilator.
- The seeds of the plant Nigella possess anti-asthmatic activity.
- The stem and bark of the plant Nyctanthes are used as mast-cell-stabilizer.
- The leaves of the plant Ocimum-sanctum tends to owe broncho-dilator action.
- The leaves of the plant Ocimum-tenuflorium found its use as broncho-dilator.
- The ripe fruits of Olea are used as mast-cell-stabilizer.
- The leaves of the plant Orthosiphon-rubicundus used as mast-cell-stabilizer.
- The parts of whole plant of Oxalis-corniculate acts as mast-cell-stabilizer.
- The leaves of the plant Passiflora used in cough treatment.
- The leaves of the plant Paederia-foetida used as anti-asthmatic.
- The seeds of the plants Physidis-angulate used as anti-asthmatic.
- The aerial parts of the plant Phymatodes used as anti-histaminic.
- The leaves of the plant Piper-betel used in the treatment of bronchitis.
- The leaves of the plant Pinus-roxburghi used as mast-cell-stabilizer.
- The fruits of the plant Piper-nigrum acts as broncho-dilator.
- The roots of the plant Picorrhiza acts as broncho-dilator
- The roots of the plant Polygala used in chronic asthma.
- The whole plant of Portulaca used as broncho-dilator.
- The leaves and other parts of the plant rauwolfia used as mast-cell-stabilizer.
- The leaves of plant Rivea-hypocratooriformis used in the treatment of asthma.
- The leaves of the plant Sansevieria-roxburghiana acts as mast-cell-stabilizer.
- The fruits of the plant Semecarpus-anacardium used in the treatment of cough-cold.
- The roots of the plant solanum nigrum are used as mast-cell-stabilizer.
- The seeds of the plant Solanum-surattense used as anti-asthmatic.
- The roots of the plant solanum Xanthophorium used as mast-cell-stabilizer.
- The flowers of the plant Sphaeranthus used as broncho-dilator.
- The leaves of the plant Swertia-chirata used as anti-asthmatic.
- The leaves of the plant Tamarindus.indica used as anti-asthmatic.
- The leaves of the plant Taxus-baccata used as anti-asthmatic.
- The aerial parts of the plant Tephrosia purpurea used as broncho-dilator.
- The leaves of the plant Terminalia belerica used as anti-asthmatic.

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- The stem of the plant Tinospora cordifolia used in the treatment of asthma.
- The fruits of the plant Trachyspermum used as mast-cell-stabilizer.
- The stem of the plant Tylophora used as anti-asthmatic.
- The leaves of the plant vitex used as mast-cell-stabilizer.
- The leaves of the plant Zanthoxylem used as anti-asthmatic.
- The rhizomes of the plant zingiber used in the treatment of asthma.

GREWIA ASIATICA

In this era of globalization, the shift towards the use of herbal medicines or medicines of natural origin is at its maximum due to the excessive imperilment or risks of modern medicines.**[8]** The use of herbal medicine has increased greatly with the global returning of people to natural therapies. The plant raw material is vulnerable to variation due to various factors i.e, the identity of the plant. Seasonal variations, drying and storage conditions. WHO concedes that the pharmacognostic parameters must be considered as a protocol for the identification of herbal drugs and validated raw material must be the basic starting point for developing a herbal products. The safety and efficacy of herbal products is totally dependent on their standardization parameters. [9]

Synonyms [10]

In 1956 sastri gave information regarding various other names of the plant grewia asiatica. The most commonly used name for the plant of grewia asiatica is phalsa. There are different names entitled to this plant in various different languages with the variation in geographical and climatic considerations. some of these are described here: [11]

- Hindi – parusha, dhamin, shukri
- Punjabi – dhaman
- Oriya – mirgichara and pharasakoli
- Gujarati – phalsa
- Bengali – phalsa, shukri
- Marathi – phalsi
- Telugu – jana, nallajana
- Kannada – buttiyudipee, tadasala
- Tamil – palisa, tadachi
- Sanskrit – miridhupala
- Urdu – phalasah
- Pakistan - falsa

Taxonomical Categorization [12]

The plant of grewia asiatica belongs to the kingdom plantae. Its sub-kingdom is viridiplantae. Its infra-kingdom is streptophyta. Its super-division is embryophta. Its division is tracheophyte. Its sub-division is spermatophytina. Its class is mangoliopsida. Its super-order is rosanae. Its order is malvales. It belongs to family tiliaceae/malvaceae. Its sub-family is grewiodeae. It belongs to genus grewia and its species is termed is asiatica.

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Biological Source [11]

It is obtained from the plants like G.*tenax*, G.*hirusta*, G.*damine*, G.*lasiodiscus*, G.*otiva*, G.*biloba*, G.*bicolor*, G.*tiliaefolia*, G.f*lavescens* and many more, belonging to the family Tiliaceae.

Geographical Source [11,12]

The plant of phalsa is extensively found in India and its subcontinent and in south-east-asia. It is distributed in several forests found in central portion of India. It is mostly cultivated in states like Haryana, Gujarat, Uttar Pradesh, Andhra Pradesh and also found in the regions of Bombay, Punjab and in some part of Maharashtra.

Macroscopic Characteristics [10,11]

Plant: 4-5m tall shrub.

Leaves: 5-8cm long & broad, shortly petioled, heart-shaped, 5-7 nerved, main nerve connected by parallel venations, margin serrate, upper surface stellately pubescent, with lower surface having tormentose.

Flowers: these are arranged together as cymes, individual flower is found to be of yellow colour which possess 5 large sepals of size 12mm and 5 smaller petals of about 4-5mm in size.í

Fruit: The fruit of this plant are full of fibres, and are drupe. The colour of the fruit at the time of maturity is slightly greyish purple. The surface of fruit possesses black depressed spots that are circular and tends to owe large stellate that is covered with several trichomes

Seeds: The seeds are usually found as pointed at one-side with groove on other side. These are usually 1 or 2.

Seed coat: The seed coat is hard like stone and is chambered either 1 or 2. Its endosperm is of oily type

Bark: The colour of the bark is grey-green and its internal surface is reddish-brown in colour. The bark is quite thick, tough-leathery as well as fibrous.

Microscopic Characteristics [11]

The microscopy of grewia asiatica decipher the existence of prismatic crystals and rosette-crystals. It depicts the presence of parenchymal cells with some spiral vessels of fibre, as well as epidermal cells are also present. It contains aleurone grains. It also indicates the presence of stellate-hair, starch grains, etc, all these parameters serve as important microscopic characteristics.

Types of Grewia Asiatica Plants

The plant of grewia asiatica is basically of two types:

1. tall phalsa
2. dwarf phalsa

There is variation in the content of juice in these two types of plants, slightly higher amount of juice is present in tall plant of phalsa as well as the seed protein is also higher in tall plant.

Yield of Harvesting

This plant of phalsa produces flower in the summer season. Its fruits are perished within a short-span of time so in such case it must be consumed or used within 24 hours for various

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purposes of selling and consumption. Average amount of yield is about 9 to 11 kilograms in one productive season.

There are various nutrients present in the fruit of the plant phalsa. It contains about 90.5 kcal calories. It possess moisture content about 76.3 and fat is less than 0.1. proteins are about 1.57g. carbohydrate are about 21.1g and dietary fibre about 5.53g with ash about 1.1. There are several mineral elements present such as calcium, phosphorous, iron, potassium, sodium. It also possess various vitamins in varied amount such as vitamin B, C, A, $B_{1,}$ B_{12}.

Chemical Constituents [11]

The plant of phalsa contains various constituents such as several mineral elements that are essential, various carbohydrates, several proteins, as well as fatty acid. The major active compounds comprises of flavonoids, various tannins, some phenols, alkaloids and various steroids are present. Fruits usually comprises of phenolic elements, tri-terpenoids etc.

Primary Metabolites: It contains sterols, saponins, and several tannins. Fruits contains phenols, flavonoids etc. **[6]**

Secondary Metabolites: The fruits of the plant grewia asiatica exhibits the presence of pelargonidin. It also contains 3,5-diglucoside, Quercetin [Fig.1] and elemets like naringenin-7-O-β-Dglucoside. Its flowers indicate the presence of beta-sitosterol, quercetin etc. Its bark is found to have botulin, lupenone [Fig.3] beta-amyrin [Fig. 2] etc. [6]

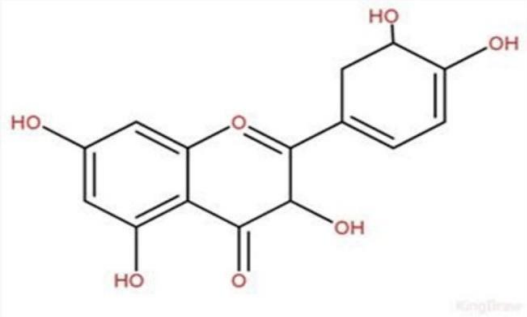

Fig. 1: Quercetin

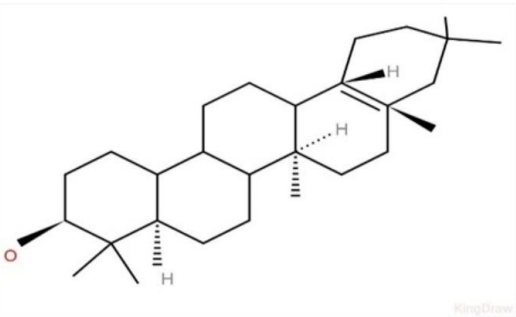

Fig. 2: Beta Amyrin

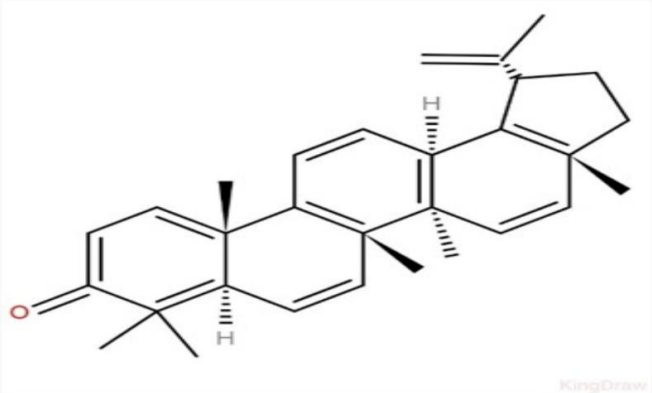

Fig. 3: Lupenone

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Collection And Cultivation [14]

- **Climate and Soil:** The collection and cultivation of plant of phalsa reveals that it develops under sub-tropical climatic conditions, it usually prefers hot & dry climatic conditions during the season of production of fruits. If one deals with winter climatic conditions than found that the plant becomes dormant and tend to shed its leaves. The extremely high temperature of June is the key factor for the ripening of fruits. The plant can tolerate temperature about 44 degree centigrade. The loam type of soil is the most preferred type of soil for its cultivation.
- **Propagation:** This plant of grewia asiatica is found to disseminate by using seeds. The basic time required for the germination of seeds is about 15-25 days and as soon the time period is completed, they are ready to plant in fields.
- **Planting**: The most preferred time period for planting is the month of monsoon i.e, June or July to develop under tropical conditions and under sub-tropical conditions it is found suitable to plant it in the month of February or march i.e, the spring season.
- **Pruning:** For the production of new shoots annual pruning is must for the regular and heavy fruit production. At the time when plant shed their leaves is the most suitable time for such process.

Pharmacological Activities [11,13]

The plant of phalsa possesses various pharmacological activities. Some of them are as follows:

Anti-oxidant

A large number of research studies on the plant of phalsa depicts that its various parts of the plants tends to owe anti-oxidant property. The anti-oxidant property is found to slightly higher in fresh plant with respect to the frozen form of the plant. If one deals with the Trolox equivalent activity index than found that the polyphenols present in the fresh plant contributes in the potent anti-oxidant activity. The maximum anti-oxidant potency is seen from the peel of pulp and as well as seeds. The important chemical constituents responsible for its anti-oxidant activity are following i.e, some coumarin derivatives, flavones, catechins are also responsible, lignans, etc. anti-oxidant-based drug formulations are used for the prevention and treatment of various complex ailments for example Alzheimer's disease, problem of stroke, cancer, diabetes, atherosclerosis etc that may develop due to oxidative damage to free radicals.

Radioprotective Effect

Research scholars of Indian-origin have scientifically proven that the plant of G.asiatica possess the properties of being a potent natural radioprotective agent. In a study the pretreatment of grewia asiatica plant fruit pulp extract in swiss albino mice protects hematopoietic system against radiation induced destruction. The administration of fruit pulp extract for about 15 days in a dose of about 700mg/kg reveals radioprotective effect in swiss albino mice when exposed to gamma radiation by decreasing the increased lipid per-oxidation and by investigating the depleted level of glutathione and protein in cerebrum .Effect of G.asiatica reveals hepatoprotective effect against oxidative stress induced by irradiation with gamma radiation by causing a significant elevation in liver DNA and RNA

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level in comparison to irradiated mice and increase in different hepatocytes counts thus protecting liver against damages caused by radiation.

Anti-microbial

If one deals with the leaves of the plant Grewia asiatica one came to know about that it possess potent anti-microbial activity, and so for this property it is utilized as a effective anti-microbial and is used in dealing with rashes on skin and eruptions.

Anti-viral

If we studies the research work of some scholars we found that the methanolic extract of leaves of plant G.asiatica indicates that the sensitivity pattern of the organism were found to be reduced in the order: candida albicans than comes aspergillus then penicillin notatum. So at last we found a conclusion that it was maximally active against Candida albicans. However, Aspergillus was found to be resistant against this developed extract.

Anti-malarial and anti-emetic

Grewia asiatica's crude alcoholic extract possess antiemetic effect in experimental models of dogs at a dose of 120mg/kg and founded to control emesis induced by apomorphine at a dose of 0.44mg/kg. In another study anti-malarial and anti-emetic properties were investigated of the phalsa plant.

Anti-platelet

If we go through the studies of various scientists one found that the methanolic extract of the leaves of the plant of phalsa exhibits potent platelet aggregation inhibition activity in a dose-dependent manner at a concentration range(1 to 10mg/ml) in arachidonic acid induced aggregation in human volunteers.

Analgesic and anti-pyretic

If one deals with studies of aqueous grewia asiatica's extract that is of fruits, founded that it possess antipyretic and analgesic activity at a dose of 200mg/kg and 300mg/kg. It depicts strong analgesic activity due to its inhibitory effect on pain induced by writhing and tail immersion test.

Immuno-modulatory

There are various indigenous medicinal plants that reveals the presence of immune-modulatory property by bettering the defence system of the body which is also known by the name of rasayanas.

Conclusion

The modern scenario reveals that the trend is diverting towards the use of herbal medicines due to less adverse/side effects as well as a great emphasis is being laid upon developing a modern drug of herbal origin for the mitigation of various ailments. The plant of Grewia Asiatica is not available at a widespread due to various obligations such as over-exploitation, the destruction of natural habitat, reduced domestication with reduced cultivation. Hence, I thought the details given in this article regarding the plant of Grewia Asiatica would prove to be a boon for reviewing and to get cognizance about plant of phalsa.

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DACTYLORHIZA HATAGIREA

Introduction [15]

The plant of Dactylorhiza Hatagirea is observed as an ornamental plant and is found to possess a medicinal therapeutic value too. This plant is of type of temperate-alpine. It is monocotyledonous. It is found to be perennial as well as a terrestrial orchid plant.

Synonyms [16]

Kashmiri – Salem panja
Nepali – Panch aonle
Urdu – Salap
Others – Hatajari, Himalayan Marsh Orchid, Marsh Orchids, Nar Mada, Panch aunle

Taxonomical Classification [17]

The plant of Dactylorhiza Hatagirea is found to be of kingdom plantae and its clade is Tracheophytes, class is angiosperms and its order is asparagales. It belons to the family Orchidaceae with its sub-family to be Orchidoideae. Its genus is Dactylorhiza. Its species are regarded as D.hatagirea.

Biological Source [18]

It is obtained from the plant Dactylorhiza hatagirea belonging to the family Orchideaceae.

Geographical Source [19]

This plant of Dactylorhiza Hatagirea is widely distributed throughout the world. It is an endemic plant in Himalayan-region. It is distributed in the areas such as in Pakistan, in Afghanistan, in Nepal, in Tibet and Bhutan. In India also it owe extensive widespread. It is found in the regions of Jammu and kasmir, in state of Sikkim, in Arunachal Pradesh, Uttarakhand and in some part of Himachal Pradesh. It is usually found at an elevated altitude range of about 2500-500. It is found in the areas of Europe, North Africa, Japan and several other places. The plant of Dactylorhiza Hatagirea is found to enclose a wide area of Nepal, wide area of India, as well as China, Mongolia, Pakistan and Russia.

Macroscopic Characteristics [20]

The plant of Dactylorhiza Hatagirea is an ornamental plant with flattened 3-7 fingered palmately lobed which is cream in colour. The roots are tuberous in nature with a size of about 5-12cm in length. The height of peduncle is about 27-41cm. The leaves of the plant are acuminate with a lanceolate i.e, linearly arranged or like oblong clusters that are usually opposite to their base. The inflorescence of flower is of spike type and these are basically zygomorphic in nature. The shade of the flower is pink and it possess purplish shade notch present with free six segments of perianth. The inner part is of pink colour. The ovary is of tricarpellate structure that is inferior and twisted and it is one chambered. The shape of the fruits is loculicidal that are basically capsules and are very tiny. Seeds are released in the form of under-developed embryo at the time of their globular juncture.

Chemical Constituents [20]

The chemical constituents present in the plant of Dactylorhiza Hatagirea are numerous. It comprises of albumins, lesoglossin , small amount of butanedioc acid .some constituents are found in trace amount , these comprises of militarrin, pyrocatechol, etc. various volatile oil are also present. Indole alkaloids are also observed with some phenolic compounds, saponins,

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ascorbic acid. It also contains phylloquinones [Fig.5] napthoquinone [Fig.4]. Several carotenoids are also found. These compounds present in the parts of the plant Dactylorhiza Hatagirea play an important role and owe to its various pharmacological activities.

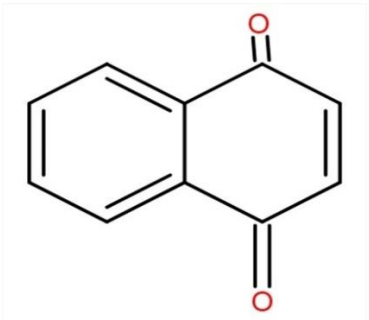

Fig. 4: Napthoquinones

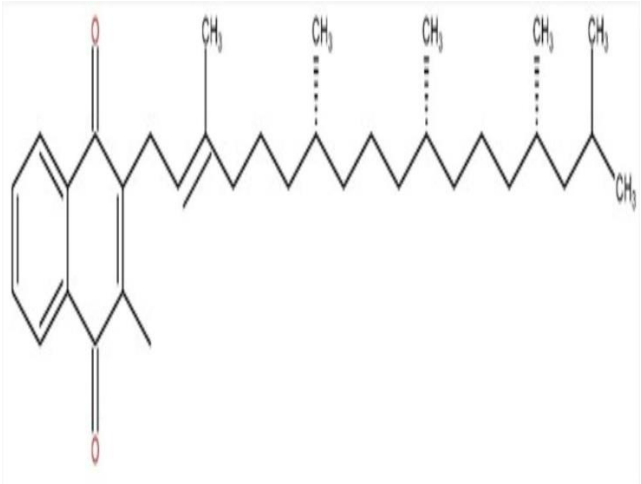

Fig. 5: Phylloquinone

Pharmacological Activities [18][20]

The resistance is shown towards the mostly gram positive as well as gram negative bacteria by the rhizomes of the plant Dactylorhiza Hatagirea. But resistance by the aerial parts of the plant is comparatively low. By estimating the zone of inhibition of the plant Dactylorhiza Hatagirea it is revealed that the part of rhizome is more potent and effective when compared to aerial parts of the plants, when tested against large number of organisms. But the exception is Eschrichia Coli., it was found to be susceptible to this plant. So one can say that this plant of Dactylorhiza proves to be a formidable source for the production of anti-microbial substances for the infection caused by E.coli. This herb proves to be a boon for significantly improving the functionality and capability of sexual organs as well as enhancing the sex behaviour and performance too. There are also evidences signifies that the plant boost up the level of testosterone in male rats. Clincically proven data reveals that the elevation in testosterone amount depicts the elevated sexual arosability and desire in adult rats that are male.

Anti-bacterial

The extract of root and shoot of the plant Dactylorhiza Hatagirea is widely used in the treatment of various ailments caused due to several species of gram positive and gram-negative bacterium. This is found to be highly beneficial against Escherichia Coli ans species of Shigella. Numerous number of extracts prepared with the help of ether, methanol, compounds like chloroform and water and these prepared preparations are tested and their zone of inhibition is determined as well as the minimum inhibitory concentration are determined. The extract prepared from the aerial parts of the plant with the use of petroleum ether and the extract prepared from the rhizomes of the plant of Dactylorhiza Hatagirea with

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the usage of methanol depicts remarkable potency against Escherichia Coli. From all the data collected from the studies of research scholars it is condemned that the rhizome part of the plant is found to be more fruitful when compared to aerial parts of the plant tested against numerous organisms.

Anti-inflammatory

The studies of research scholars reveals that the tubers of the plant Dactylorhiza Hatagirea divulge a influential anti-inflammatory pursuit due to the existence of numerous chemical compounds such as tannins, saponins, diterpenes, steroids, glycosides, flavonoids, alkaloids. This activity was investigated in the paw of the rat, model of oedema which is basically inspired by the carrageenan-granuloma model for various inflammation comprises of acute as well as chronic type. The hydro-ethanolic extract of the tuber of the plant decipher a dose-dependent effect of anti-inflammation. This anti-inflammatory activity needs to be explored to a greater extent in order of attainment of more effective formulations.

Neuro-pharmacological

Sleeping pills or hypnotic drugs commonly known as soporific dosage form belongs to the anti-psychotic category of the medications, their main goal is to persuade sleep for the betterment of sleeplessness or they are used as anaesthesia in various surgeries. Its studies depict that was safe at all doses with zero mortality in mice when administered to them orally. However, just for the cognizance about the involved mechanism more studies can be performed on various models of animals before the effective utilization of the medication in the therapy of certain neuro-related problems.

Anti-cancer

The extract of the plant *Dactylorhiza Hatagirea* decipher a significant effect on cancerous cells. The root extract of the plant is found to be more potent when compared to the shoot extract of the plant.

Anti-diabetic

The tubers of the plant as well the leaves of this ornamental plant reveal its anti-hyperglycemic potency, and makes this plant a significant in the production of anti-diabetic formulations. The methanolic extract prepared from the leaves of the plant decipher zero cyto-toxic effect. It also possesses anti-microbial properties which is depicted from the solvent catalysed prepared extracts.

Other applications

This plant of Dactylorhiza Hatagirea found a widespread utilization in numerous fields. This is employed in silk industries. These are grown as ornamental plant with the motto of utilization as a decorative element. Their glorious aspect of beautiful flowers marked them for regarding them as ornamental plants. It is also utilized as a insect repellant. The parts of the plants such as leaves and various other are employed as fodder for the livestock. It is utilized in enhancing the qualitative properties of the cryophobhic milk-products. These are also utilized as vegetables. These are also used in the manufacturing of perfumes, with aim of elevation of fragrance. In the production of witchcraft tubers of the plant are employed.

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Conclusion

The plant of Dactylorhiza Hatagirea is basically utilized as a effective nervine tonic due to its aphrodisiac charaacteristics as well as astringent. It is extensively employed in the treatment of a number of ailments such as diarrhoea, weakness, fever, etc. latest research gives a view regarding its potent effect against e.coli. This herb plays a significant role in the enhancement of level of testosterone as well as sexual desire. The central motto of this article is to provide information about this aesthetically important, ornamental orchid. One must also focus on identifying more active constituents responsible for various pharmacological properties. The plant should be preserved, protected, conserved with the help of technology as well as traditional methods.

LILIUM CANDIDUM

The plant of lilium candidum often regarded as a folk-medicine. It is extensively distributed in the regions of middle-east Balkans, as well as several other parts of the country. This plant is usually utilized as anti-fungal, used as a key ingredient in the manufacturing of several cosmetics and various other remedies. This plant is commonly regarded as Madonna. It belongs to the family liliaceace. This plant possesses aesthetic beauty, or one can regard it as rare beauty for its glorious look. At present main aim is to identify a greater number of therapeutic properties that the plant withholds [21].

Synonyms [22,23]

- Madonna lily
- White lily
- Lent-lily
- Annunciation lily
- Lilium peregrinum Mill
- Lilium album Houtt

Taxonomical Classification [23]

This plant of Lilium Candidum belongs to the Kingdom i.e, plantae. Its clade is Tracheophytes. Its class is angiosperm and is of the order liliales. It belongs to the family Liliaceae and its sub-family is liliodwae. It belong to the tribe of lilieae. It is of the genus lilium and its species are regarded as L.candidum.

Biological Source [24]

This plant of Lilium Candidum develops from the bulbs. There are about more than 100 species of this plant. It belongs to the family Liliaceae.

Geographical Source [23]

Various species of this plant of lilium candidum are confined to north-hemisphere. It is extensively distributed in the areas of China and is cultivated as a regard of being an ornamental plant, throughout the globe. It is also utilized as a one of most significant edible plant and possess a greater therapeutic medicinal value. It is indigenously grown in the regions of Balkans. It is also found in the areas of Italy, North-Africa, Ukraine, France.

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Macroscopic Characteristics [24]

This plant of lilium candidum is tall measuring about 70-180cm. It is a perennial plant. It possesses large sized flowers that are fragrant and owe a wide variety of shades. The size of flower is about 10cm, aesthetically pleasant smelling. These flowers contribute a greater part of being important to culture as well literature of globe. Leaves being lanceolate in shape develops from rosette of ground. There are densely grown oversized leaves present that covers the stem portion of the plant. One stem comprises of about more than 15 flower. These are designed in the form of grapes. They used to produce flower in the month of June-July. The shape of the fruits resembles to those of capsules.

Microscopic Characteristics [26]

The microscopy of the plant of Lilium Candidum decipher the presence of epidermal cells which are basically single-layered. The shape of these epidermal cells is rectangular. Root hair are visualized in the outer part. Then comes the cortex which comprises of parenchymatic cells which varies in their structure and size. These parenchymatic cells are observed just below the epidermis. Then one observes passage cells which are of the shape of well are placed in the endodermis region. Phloem is present beneath the endodermis. The vascular beams observed are of radial pattern in the root.

Chemical Constituents [25]

Steroidal saponins

Alkaloids

It consists of Berberine [Fig.6], Spirosol, rhamnopyranosyl, D-glucopyranosy, L-rhamnopyranosy, D-glucopyranosyl, D-glucopyranoside polysaccharides. It consists of polysaccharides such as like glucose, galactose, mannose, arabinose, and galactouronic acid [Fig.7].

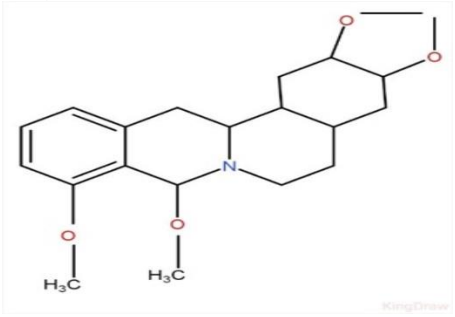

Fig. 6: Berberine

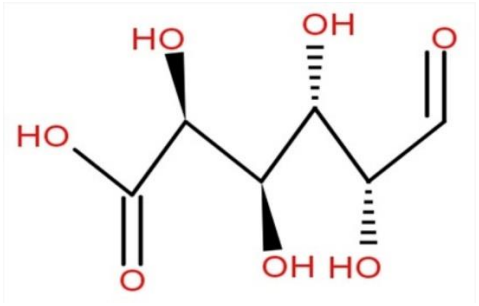

Fig. 7: Galactouronic acid

Pharmacological Activities [24][25]

Anti-inflammatory

For the treatment of ulcers as well as burns the extract of lilium candidum is extensively used. It possess anti-inflammtory action. It is also used as a remedy for the mitigation of wounds. In lilium candidum many chemical constituents are present which are wholly responsible for the anti-inflammatory effect, these constituents comprise of certain steroidal as well as non-steroidal glycosides. From the bulb of lilium candidum constituents like

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spirostanol and furostanol. The butanolic extract from the petals of the plant reveals the presence of β-sitosterol and β-sitosterol glucoside.

Anti-tumor

The anti-tumour effect of the plant is due to the presence of polysaccharides. The alkaloids present in the parts of the plant of lilium candidum are found to be responsible for the cytotoxic effect against the tested MCF-7.

Hepato-protective

The flowers of the plant when extracted with the methanol depicts a significant hepatoprotective action. But as per the studies of the research scholars the active constituent responsible for the hepatoprotective potential is yet to be identified.

Anti-oxidant

The plant of Lilium Candidum is found to exhibit a potent anti-oxidant activity which is basically due to the presence of several chemically active constituents, that mainly ehances the immunity. The polysaccharides present in the parts of plant of lilium candidum play a significant role in the development of scavenging property.

Anti-fatigue and Anti-hypoxia

The polysaccharides obtained from the lilum candidum are responsible for its anti-fatigue and anti-hypoxic activity.

Hypoglycemic

When the polysaccharides obtained from the extract of lilium candidum indicates the existence of significant hypoglycemic activity.

Anti-bacterial

The bulbs of the plant of Lilium candidum depicts the presence of antibacterial activity. Many substances were separated like alkaloids, tannins, saponins, flavonoids, etc all these chemical constituents contribute significantly in the dose-dependent relation among the antibacterial property and the extract of bulb of the plant.

Antidepressant

The antidepressant activity was observed in the rats by using the depression model. Basically, saponins isolated from the plant are responsible for anti-depressant action.

Conclusion

The plant of lilium candidum is a fascinating plant with the presence of large beautifully attracting flowers. This plant possess bulbs. These are employed in the floral industry as well as used as a folk-medicine. This plant is found to possess a large number of biologically active constituents that contributes a significant role in several pharmacological activities such as anti-inflammatory property, cyto-toxic action, anti-tumour activity etc. This compilation regarding the plant can be prove as a boon to numerous research scholars studying about the details of the plant of lilium candidum.

LILIUM POLYPHYLLUM

The plant of lilium polyphllum is one among the very fascinating, aesthetically beautiful plants. This is the plant that is usually recognized as a plant used for commercial purpose. It

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is also regarded as an ornamental plant, it is uniquely-beautiful in its own way. It is the plant of the genus i.e herbaceous [27].

Synonyms [28]

There are various other names used for the plant of lilium polyphyllum. Some of them are as follows:

- English – white lily
- Sanskrit – kakoli, vayasoli
- Others – lilium punctatum

Taxonomical Classification [28]

The plant of lilium polyphyllum belongs to the kingdom plantae and its clade is tracheophytes. It is of the class angiosperm. Its order is monocot. It belongs to the family Liliaceae and its sub-family is lilioideae. Its tribe is lilieae. It is of the genus lilium and its species are regarded are l.polyphyllum.

Biological Source [30]

The plant of lilium polyphyllum belongs to the family Liliaceae. It possess about more than 100 species. It is a herbaceous plant.

Geographical Source [24,27]

This plant of lilium polyphyllum is widely spread in the areas possessing altitude of about 2000-3000. It is distributed in the areas of Nepal, India, Pakistan, and many more. In India also it is distributed to a larger extent i.e, founded in the regions of Uttarakhand, Himachal Pradesh, Jammu & Kashmir etc.

Habitat [30]

This plant of lilium polyphyllum grows at an altitude of about 2000-3000. It grows well in the humus rich soil. This plant prefers cold atmospheric conditions as well as soil of acidic pH. Flowers bloom during the heavy snowfall.

Macroscopic Characteristics

The plant of lilium polyphyllum is regarded as a herb with bulbs. Its height is about 1m. The stem of the plant is found to be hollow in nature. The leaves of the plant are quite fleshy-type, they possess height of about 6-12cm and thickness of about 1cm. The shape of the leaves is lanceolate , these are sessile with parallel leaf-venation. The flower production is about 5-10 flower per plant. The flowers are attracting and fascinating, these are full of strong fragrance. The nectar gland are present at the base of the flower. Ovary is founded to be of superior type which is trilocular and possess a long style. Seeds are observed arranged linearly.

Anatomy of Lilium Polyphyllum [30]

Root

The root of the plant is developed from the disc portion of the bulb. The cells present in the root are polygonal and parenchymatous. The portion is endodermis is clearly separated and have barrel shape cells. Xylem is surrounded by a thin section of phloem. The primary xylem is found near the centre. Pith observed as parenchymatous.

Bulb

The bulb of the plant is found to possess concentric layer of cells. The leaf of the plant comprises of a epidermis which is cuticular and possess mesophyll cells which are rich in

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starch content. The mesophyll cells contains raphides. Tracheids are also present which are narrow.

Stem

The stem of plant is found to be full with the presence of cuticles. It possess 7-8 layered ground tissue. The cells are parenchymatous in nature. Various kind of cells are present that possess several kind of pigments. These cells having pigment are present in the ground tissue layer. Vascular bundles are also located in the area of ground tissue cell. There is a small patch of cells of phloem located in vascular bundles. Small number of xylem element are also present. These are covered by sclerenchymatous layer of cells.

Leaf

The leaf is observed to have epidermis with cuticles present over it. On its abaxial surface, stomata are present. There is large number of chloroplast present in the guard cells. Mesophlyll layer comprises of chlorenchymatous cells which are of polygonal cells. Numerous vascular bundles are present in which are represented in the form of parallel vein. It comprises of xylem and phloem.

Flower

The flower of the plant of lilium polyphyllum are of cram shade and comprises of six tepals which form a bell. Anthers present are found to be of the type of dithecous. The wall of anther is made up of three layer of cells. There are also present microspore mother cellsthat tend to form tetragonal shaped tetrads after under-going through the process of meiosis. Pollen grains are of elliptical shape. Seeds are of smaller size. There is also some cognizance regarding the formaton of numerous kind of embryo-sac.

Microscopic Characteristics [31]

The microscopy of the plant of lilium polyphyllum reveals that the bulb of the plant is found to possess concentric layer of cells. The leaf of the plant comprises of a epidermis which is cuticular and possess mesophyll cells which are rich in starch content. The mesophyll cells contains raphides. Tracheids are also present which are narrow.

Collection And Cultivation [30]

Seed Germination

When the seeds proceed towards the maturity, they are founded to be associated with the soil for about 8-10 months. They prefer a cold climatic condition for their development. The cold temperature is regarded as key factor in starting the process of germination. The process of seed germination is found to be furnished when it is provided with the temperature of about 5^{o} C for a time period of about 6 months after the time when seed is dispersed. Then the radicals are observed to be developing in the month of June. Rainfall in the month of July-august contributes significantly in the germination process of the plant and enhances its growth and development process.

Bulb Sprouting

The size of bulb tend to increase during the rainy season due to availability of water in the large amount. The food get reserved significantly. Then this is proceeded by the process of stratification in the month of winter. This play a key role in the process of vernalization.

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Flowering

The process of flower production is started in the plant aged about 7-8 months and usually in the month of June. The mature plant comprises about 50-60 leaves. This number of leaves vary from species-to-species.

Pollination

The process of pollination in the plant of lilium polyphyllum is usually entomophily i.e,the occurrence of pollination by employing insects. In this plant the size of the flower is generally large and is eye-catching, therefore easily visible to visitors. These flowers tend to produce a sweet aroma kind of fragrance. This fragrance attracts a large number of bumble-bees.

Chemical Constituents [30]

The plant of lilium polyphllum is found to comprise a large number of chemical constituents. These active constituents are responsible for a large number of pharmacological activities. One of most active compound of the plant is linalool [Fig.8]. It also contains terpineol. [Fig.9]

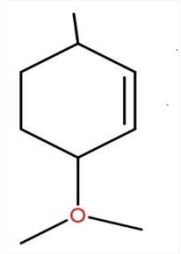

Fig. 8: Linalool

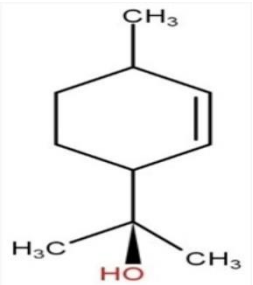

Fig. 9: Turpineol

Therapeutic Uses [31]

All lilies bulbs are not medicinal but yes *Lilium polyphyllum* bulbs have some medicinal value. The industry is employing it in more than 30 Ayurvedic medication formulations. In the form of Ghritam (medicated clarified butter), Taila (medicated oil) and Churana (powder). For galactagogue, expectorant, aphrodisiac, diuretic, antipyretic, and to treat general weakness. Besides, due to anti-ageing and revitalizing properties, it has been used in Chyavanprasha. Additionally, field surveys in different habitats of the species revealed other uses. Local people remove the soil from the and wash underwater. Further, they clean the bulb and keep it under shade to dry. These dry bulbs are mixed with potatoes and cooked in vegetable oil. The dish keeps the body warm and increases sexual power at high altitude region. On the other hand, rodents consuming lily bulb and fulfil their nutritional requirement

Is this wild lily under threat?

The lily is under severe threat due to its medicinal, ornamental and aesthetic uses. Due to medicinal values and current market demand. People exploit the bulbs in high quantity from the wild. This leads to the decline of mature plants and a few surviving populations. Further, narrow distribution, forest fire, rodents, diseases. And habitat degradation is also responsible

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for species decline. Additionally, I found small population size, narrow geographic range, small area of occupancy Thus, the species is declared Critically Endangered on IUCN Red List.

Steps to conserve this rare Himalayan lily

Government of India posed a complete ban on bulb harvesting from the wild. Our field visits confirm its Critically Endangered status on IUCN Red List in 2015. Phenological observations reveal the life cycle of this rare lily. Interestingly a method is now available to determine the age of this lily. The mature plants of this lily are approximately 12 years old. Seed germination, vegetative propagation and tissue culture method are ready to propagate the species. Morphological and biochemical variations among the different population are at hand. Domestication trails in two altitudes can help for large scale cultivation.

Threats

The plant of lilium polyphyllum is considered as an endangered species. It owes a major threats due to the degradation of the habitat with the modernisation and technological development.

Conservation Strategies

The process of in-situ conservation is one of the most preferred methods adopted for the purpose of conservation. This practice can be proved to be as a boon for the plant of lilium polyphyllum. Its areas of natural habitat must be conserved properly. awareness campaign must be entitled for the protection purpose.

CONCLUSION

The modern scenario reveals that the trend is diverting towards the use of herbal medicines due to less adverse/side effects as well as a great emphasis is being laid upon developing a modern drug of herbal origin for the mitigation of various ailments. The plant of Grewia Asiatica is not available at a widespread due to various obligations such as over-exploitation , the destruction of natural habitat, reduced domestication with reduced cultivation. Hence I thought the details given in this article regarding the plant of Grewia Asiatica would prove to be a boon for reviewing and to get cognizance about plant of phalsa. Secondly, the plant of Dactylorhiza Hatagirea is basically utilized as a effective nervine tonic due to its aphrodisiac charaacteristics as well as astringent. It is extensively employed in the treatment of a number of ailments such as diarrhoea, weakness, fever, etc. latest research gives a view regarding its potent effect against e.coli. This herb play a significant role in the enhancemnent of level of testosterone as well as sexual desire. The central motto of this article is to provide information about this aesthetically important , ornamental orchid. One must also focus on identifying more active constituents responsible for various pharmacological properties. The plant should be preserved, protected, conserved with the help of technology as well as traditional methods. And the plant of lilium candidum is a fascinating plant with the presence of large beautifully attracting flowers. This plant possess bulbs. These are employed in the floral industry as well as used as a folk-medicine. This plant is found to possess a large number of biologically active constituents that contributes a significant role in several pharmacological activities such as anti-inflammatory property, cyto-toxic action, anti-tumour

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activity etc. This compilation regarding the plant can be prove as a boon to numerous research scholars studying about the details of the plant of lilium candidum. So atlast, I conclude that this review article would proof to be of great importance for research scholars who are impeding their research in treatment or detailed information regarding asthma.

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Nil.

CONFLICT OF INTEREST
'None' declared by the authors.

REFERENCES

[1]. Global Initiative for Asthma (GINA). Global strategy for asthma management and prevention. Updated 2017. http://www.ginasthma.org.
[2]. Adesina S.K, Johnny I.I, Olayiwola G," Plants in Respiratory Disorders I- Anti-asthmatics, A Review", British Journal of Pharmaceutical Research, 2017:16(2): 1-22, through www.sciencedomain.org.
[3]. https://www.uofmhealth.org/health-library/hw161158
[4]. https://www.nhs.uk/conditions/asthma/causes/
[5]. https://www.mayoclinic.org/diseases-conditions/asthma/symptoms-causes/syc-20369653
[6]. https://www.mayoclinic.org/diseases-conditions/asthma/diagnosis-treatment/drc-20369660
[7]. Singh S.K, Patel J.R, Dubey P.R, Thakur S,"A Review On Anti-asthmatic Activity Of Traditional Medicinal Plants", International Journal of Pharmaceutical Sciences Review and Research, 2014; 5(10): 1000-07, through at: https://www.researchgate.net/publication/270454061
[8]. Kunle O.F, Egharevba H.O, Ahmadu P.O. Standardization of herbal medicine. International Journal of Biodiversity & Conservation, 2012; 4(3): 101-12.
[9]. Kaur S, Kaur S., Kaur N, Singh B, "Pharmacognostic Investigations on Leaves of Grewia Asiatica Linn", International Research Journal of Pharmacy, 2018;9(5): 85-90, through www.irjponline.com.
[10]. Sinha J, Purwar S, Chuhan S. J., Rai G, "Nutritional and medicinal potential of Grewia subinaequalis DC. (syn. G. asiatica.) (Phalsa)", Journal of Medicinal Plants Research, 2015: 9(19): 595, through www.academicjournals.org.
[11]. Paul S,"Pharmacological actions and potential uses of Grewia asiatica: A review", International Journal of Applied Research, 2015;1(9): 222, through, www.allresearchjournal.com.
[12]. Research Botanist and Associate Curator, National Herbarium, National Museum of Natural History, MRC 166, PO Box 37012, Washington, DC 20013-7012, USA.
[13]. Haq. M.Z.U, Stankovic M.S, Rizwan K and Feo V.D, "A Review on Grewia Asiatica L., A Food Plant with Multiple Uses", Research Gate, 2013;18: 2667, through, www.mdpi.com/journals/molecules.
[14]. Singh K.K, Singh S.P, "Cultivation and Utilization in Phalsa (Grewia Asiatica L.) Under Garhwal Himalayas Region", Journal of Medicinal Plants Studies, 2018: 254-256, through, www.plantsjournal.com.
[15]. Magar M.M et al., "Dactylorhiza hatagirea: A Critical Issue for Research and
[16]. Development in Nepal", Nepal Journal of Science and Technology, 2020; 19(1):26.2.
[17]. https://indiabiodiversity.org/species/show/229456.
[18]. https://en.wikipedia.org/wiki/Dactylorhiza_hatagirea.
[19]. Pant S, Rinchen T, "Dactylorhiza hatagirea: A high value medicinal orchid", Journal of Medicinal Plants Research Vol. 6(19), 3522,3524.
[20]. Wani A.I, Kumar V, Verma S, Tasleem A, A Irfan, "Dactylorhiza hatagirea (D. Don) Soo: A Critically Endangered Perennial Orchid from the North-West Himalayas", December 2020:3, through: https://www.researchgate.net/publication/346567910
[21]. Zaccai M, Yarmolinsky L, Khalfin B, Budovsky A, Gorelick J, Dahan A and Shabat B, "Medicinal Properties of Lilium candidum L. and Its Phytochemicals", 2020,9, 95:2 through www.mdpi.com/journal/plants.
[22]. https://thesaurus.yourdictionary.com/lilium-candidum
[23]. https://en.wikipedia.org/wiki/Lilium_candidum

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[24]. Patocka J, Navratilova Z, "Bioactivity of Lilium Candidum L: A Mini Review", Biomedical Journal Of Scientific And Technical Research, vol:18,5:1-4, through https://www.researchgate.net/publication/333774125.
[25]. Wanga P, Li J, Attiaa F.A, Kanga W, Wei J, Liua Z, Li C, "Acritical review on chemical constituents and pharmacological effects of Lilium", Journal of Food Science And Home Wellness 8 (2019) 330–336
[26]. Ozen F, Temelta H, Aksoy O, "The anatomy and morphology of the medicinal plant, Lilium Candidum L.(Liliaceae), distributed in marmara region of Turkey", 44(4): 1185-1192, 2012, through https://www.researchgate.net/publication/266340464.
[27]. Dhyani A, "Lilium polyphyllum – Rarest of Rare Lilies", 2014: 85-91, through www.researchgate.com
[28]. https://en.wikipedia.org/wiki/Lilium_polyphyllum
[29]. http://medplants.blogspot.com/2012/09/lilium-polyphyllum-kakoli.html
[30]. Sourabh p, Thakur j, et al.,"Biology of Lilium polyphyllum - A threatened medicinal plant", International Journal of Phytomedicines and Related Industries, June 2015: 159-165, through www.researchgate.com
[31]. Chinmay R, Kumari S, Bishnupriya D, RC M, MM P, Ramesh R," Pharmacognostical & Phytochemical Studies of Roscea procera (Kakoli) and Lilium Polyphyllum (Ksheerkakoli) in comparison with market samples", Pharmacognosy Journal | September 2011:Vol 3:Issue 25:32-38, through www.researchgate.com
[32]. https://anuragdhyani.com/wild-lily-from-garhwal-himalayas-lilium-polyphyllum.

