Original Article

Role Of Mentha Spicata (Spearmint)

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Abstract

Local name of Spearmint is Garden mint, common mint, lamb mint and Mackerel mint. It is the species of mint. It belongs to the family of Lamiaceae. It is mainly cultivated in Europe, Asia, North America and Africa. The leaves of M. Spicata are used in foods, sweets, salads, Soups, Cheese, Meats, Fish, Sauces, Fruits and vegetables. The essential oil is widely used in Jellies, toothpaste, candles and candies. It contains several chemical constituents like carvone (51.7%) , cis – carveol (24.3%) , Limonene(5.3%), 1,3- cineol (4%), Carvyl acetate (2.1%), cis – di hydro carvone (2.2%) and cis – sabinene hydrate (1,0%). The spearmint tea or spearmint oil are used as drug in several disease. The spearmint is very good in the case of digestive upset , aid women with hormone imbalance , may reduce facial hair in womens , may improve memory, lowering the blood pressure and blood sugar level. It also used to fight with bacterial infection, improve arthritis pain, reduce the stress and easy to incorporate into your diet. Spearmint has anti – androgen properties that decreases Testosterone level and Hirsutism in women with PCOS.

keywords : Mentha Spicata, Garden mint, lowering the blood pressure, blood sugar level.

Introduction:-

PCOD (polycystic ovarian disease) is caused due to the hormonal imbalance during reproductive age. It is a medical condition which affects women's level and these hormones are Estrogen , Progesterone, Luteinizing hormone (LH), Follicle stimulating hormone (FSH) and Gonadotropin releasing hormone (GnRH). Due to the increase level of male hormone, females might skip their menstrual cycle and have irregular ovulation making it hard to get pregnant. It's symptoms include obesity, Hirsutism (loss of hair), darkening of skin (neck, groin and breasts), weight gain, heavy bleeding, acne (on face, chest and upper back) and headache.

Here, the spearmint herbal plant is used to reduce the PCOD symptoms, have anti – androgenic activity. It has an anti oxidant, anti inflammatory properties, also helps to reduce acne, also work for hirsutism and help to maintain hormone level.

Spearmint leaves decreases cholesterol in type II diabetes, decreases oxidative stress.

Plant profile :-

Spearmint is a species of Mentha spicata (M. Spicata) mainly found in Europe and Southern Asia, extends from France in the West to Sothern China in the East.

It is a perennial herbaceous plant, 30 – 100cm tall, hairless to hairy stem and wide spreading rhizomes from which it grows. Leaves are 5 – 9 cm long, 1.5 – 3 cm broad, the stem is square shaped. They produces pink or white colour flower, 2.5 – 3 mm long and has largely seeds measure 0.62 – 0.90 mm. it is used as flavours in food and herbal teas.

Synonyms: - Mentha Chalepensis Mill.

Mentha MicrophyllaK.Koch

Mentha Spicata

Binomial name: - Mentha Spicata

Kingdom: - Plantae

Clade: - Tracheophytes

Clade: - Angiosperms
Clade: - Eudicots
Clade :- Asterids
Order: - Lamiales
Family: - Lamiaceae
Genes: - Mentha
Species: - M. spicata

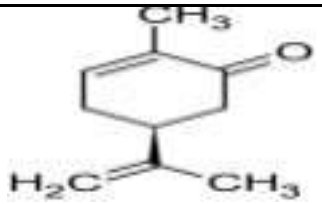
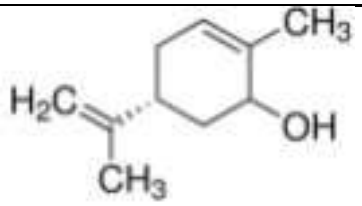
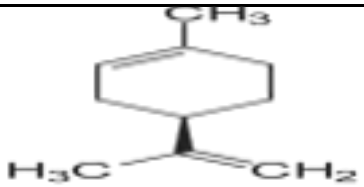
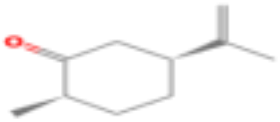
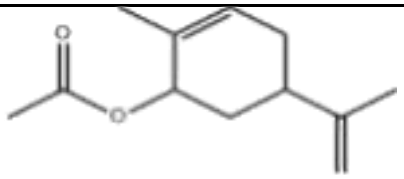
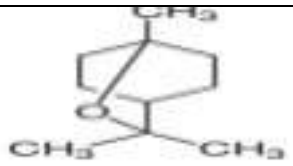
Cultivation:-

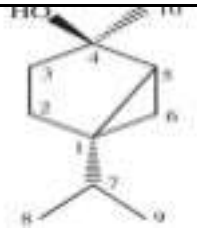
Spearmint contains green leaf and purple to pinkish colour. It grows in rich, moist soil, semi shade climate also need a full sun to mostly shade. It is highly cultivated in loam soil because it consist sand, slit and a smaller amount of clay. The roots of spearmint spread very quickly into nearer area and difficult to stop or control due to it spearmint grows in pots and planters. Mostly harvested in bright and sunny weather, planted in December. It is firstly harvested in last week of April and second harvested after 60-70 days after the first week of harvesting.

The essential oil of Spearmint is R – Carvone, sufficient to produce a smell, helps to identify as a spearmint smell.

Phytochemical constituents:-

Spearmint contains, 19 types of chemical constituents but the chemical which shows major pharmacological effect are -

chemical constituent	structure	uses
Carvone		It is used in chewing gum,aromatherapy oil. Also used in personal care products.
Cis Carveol		Used as flavor additives and fragrance enhancer in cosmetics.
Limonene		Used in medical ointments and cream, can penetrate the skin and used for personal hygiene.
Cis-dihydro -carvone		Perfume, cosmetics and personal care products.used in daily used products food, tobacco , Beverage
Carvyl acetate		Used in perfuming agents and cosmetics.
1,8- Cineol		Mucolytic and spasmolytic action on respiratory tract.

cis - Sabinene hydrate		Used as a food additives and flavaouring agent.

Pharmacological properties;

Mentha spicata has consist different pharmacological properties like
Analgesic, Anti inflammatory, anti pyretic, DNA damage protecting activity, Anti oxidant, Anti androgenic, Anti microbial, Cytotoxic, Anti viral, Anti Cancer, Anti emetics.

1. Analgesic activity: mentha spicata (spearmint) shows analgesic action due to the presence of Rosmarinic acid. Rosmarinic acid with high amount helps to reduce pain of osteoarthritis. Presence of carvone, limonene and menthol also reduce the pain and shows analgesics effects.
2. Anti inflammatory: carvone is responsible to reduce inflammation by decreasing the production and secretion of pro inflammatory cytokinins such as TNF - alpha secretion.
3. Anti pyretic activity: spearmint shows anti oxidant property due to the presence of poly phenolic composition and rosmarinic acid.
4. Anti androgenic activity: - it shows anti androgenic activity by reducing testosterone level and increase the female hormone which is responsible for ovulation like FSH and LH. it also reduce the Hirsutism.
5. Anti microbialactivity :- it shows anti microbial , anti baterial activity against staphylococcus, streptococcus pyrogens and B. subtills due the presence of carvone and Limonene.
6. Anti canceractivity: - rosmarinic acid shown anti cancer activity , inhibits proliferation and induce apoptosis.
7. Anti emetics: - spearmint produces anti emetic effect on the gastric lining and colon.

Abayechawet.al.,(2021)- it stated that Plants are rich in phytochemical compounds that offer a source of dietary ingredients used to treat various ailment. Therefore, the review of the present study shows the bioactivity, health effects, and inter-cropping advantages of spearmint.

Brahmi et.al.,(2017)- it stated that Mentha species, one of the world's oldest and most popular herbs, are widely used in cooking, in cosmetics, and as alternative or complementary therapy, mainly for the treatment of gastrointestinal disorders like flatulence, indigestion, nausea, vomiting, anorexia, and ulcerative colitis. Also have antimicrobial, fungicidal, antiviral, insecticidal, and antioxidant properties.

Pramila et al., (2012) [8] published a research paper on phytochemical analysis and antimicrobial potential of methanolic leaf extract of peppermint. They assessed the phytochemical content, antioxdative activity and antimicrobial activity of the methanolic leaf extract of locally available Mentha piperita, the mint plant.

Sachan et al., (2013) [9] did an overview on Mentha piperita and concluded the major constituents are menthol (30–55%) and menthone (14–32%). Furthermore, they gave much information about the uses of oil of peppermint leaves. Medically they can

be used for both internal and external diseases (defects); internally for symptomatic treatment of irritable bowel syndrome, and digestive disorders such as flatulence and gastritis dysentery, diabetes, dysmenorrhea, fevers, jaundice, urinary infections and externally for treatment of myalgia and headache.

Loolaie et al., (2017) published a paper on "Peppermint and Its Functionality: A Review" and their molecular docking showed that among peppermint compounds, cineol and menthyl acetate apparently bound to the active site of aryl amine N-acetyltransferase enzyme. This type of interaction indicates the inhibitory effects of these compounds against this enzyme. Furthermore, quantum studies revealed that menthol (Egap=16.9 eV) and pulegone (Egap=12.6 eV) are stable and unstable compounds in this plant. This shows peppermint is a good target for research and further studies should be focus on evaluating of peppermint in prevention of human diseases.

Singh et al., (2015) published an Arabian Journal of Chemistry entitled "Antibacterial and antioxidant activities of Mentha piperita L." and his team concluded that there are strong antibacterial and antioxidant activities of peppermint oil but additional investigations need to be performed in order to confirm the safety of these concentrations (MIC) for human consumption.

Brian et al., (2001) New York State Integrated Pest Management studied the effects of peppermint use in human's health and also adverse effects in environment and found that a small percentage of the population appears to be allergic to peppermint and/or to peppermint oil and its derivatives. Most chronic toxicity tests found for peppermint, peppermint oil, and peppermint water extracts were negative. Peppermint's chemical isolates also tested negative in most cases, but in a few cases produced equivocal or even weakly positive results.

Zuhair (2016) published "Phytochemicals Screening and Evaluation of Antioxidants and Antibacterial Activities of Five Medicinal Plants" on International journal of
Pharmacognosy and eextracts of
Syzygiumaromaticum, Mentha piperita, Cinnamomum verum, Pimpinella anisum L. and Zingiber purpurea while saponin and steroids was only present in the Syzygiumaromaticum and Zingiber purpurea extracts(absent in peppermint).

Ebenezer et al., (2011) published a Journal entitled with "Comparative evaluation in the efficacy of peppermint (Mentha piperita) oil with standards antibiotics against selected bacterial pathogens" on Asian Pacific Journal of Tropical Biomedicine. Dr.Aruna (2018) published an article on The Himalayan Times [16] with a title "Moringa and mint: The magic plants" and it was written that moringa and mint are useful plants that can help us get better micro-nutrition.

Diane and Jeffrey
(2006) published a paper on bioactivity and potential health benefits of peppermint tea. They concluded that the main volatile components of the essential oil are menthol and menthone. In vitro, peppermint has significant antimicrobial and antiviral activities, strong antioxidant and antitumor actions, and some antiallergenic potential.

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