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STUDY OF CAMPHOR (*Cinnamomum camphora*)

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ABSTRACT

From ancient times, people all over the world have used camphor (*Cinnamomum camphora*), which is derived from camphor's wood tree, as a cure for a ample variety of symptoms, including cough, inflammation, ingestion, infection, congestion, pain, and irritation. Studies on the bioactive extract's safety should be conducted. In India, about 70% of contemporary medications come from natural sources. In addition to serving as traditional medicines, medicinal plants also serve as important trade commodities, supplying far-off markets with what they need. With a long tradition it was used as an antibacterial, antipruritic, rubefacient, abortifacient, aphrodisiac, contraceptive, and location suppressant, camphor is well known to many people as a key component in topical home treatments for various kinds of sickness.

Camphor was employed for a sanitation during the leishmaniosis (kala-azar) epidemic in the 1400's to stop the plague's spread over Europe. When cholera, smallpox, and influenza were on the rise in the 19th century, mothballs made of camphor were employed on the Indian subcontinent as a cough suppressant. Hahnemann, the creator of homoeopathy, presented his findings during the "flu pandemic" of the 18th century in Russia. Research on camphor and its proposed use as a "divine medicine" for influenza when administered in very small doses Camphor has historically been used in domestic cleansers, as a food flavouring, as a good fragrance in cosmetics, as a rubefacient for treating minor muscle aches discomfort, and as a popular ingredient in household cleaners. Camphor is utilised in a variety of commercial goods on the Indian market, including VapoRub with Vicks.

It is used as a antiviral anticoccidial insecticidal antimicrobial anticancer, antinoceptive and antitussive properties define camphor physiologically. Additionally, it aids in skin penetration. However, camphor is a highly hazardous chemical, and there have been numerous reported occurrences of camphor poisoning.

Key words: Medicinal plants, Camphor, Antiseptic, Abortifacient, Lactation suppressant.

INTRODUCTION

The wood of Camphor tree (*Cinnamomum camphora*) and additional Laurel family trees that are connected is the source of camphor. Camphor laurel is further related Laurel family trees tree. Camphor is a white, crystalline compound with a potent aroma and bitter taste. Wood, twigs, tree bark is treated, as well. through steam distillation, filtration, and sublimation to produce camphor. Camphor is the primary chemical contained in the leaves of *Cinnamomum camphora* L.

Other chemicals included in the leaves include limonene, eugenol, cineol, linalool, safrole, myrcene, humulene, nerolidol, borneol, and camphene. Several Various indigenous medicine systems use different plant species. Systems, including Siddha, Ayurveda, Unani, and allopathy, to treat various illnesses. Because of the toxicity and side effects of allopathic treatments, the use of herbal medicine is growing in popularity. Over the past few years, the use of *C. camphora* leaf oil as a source has grown, and it has become important lately. source of natural linalool. After fractionation, camphor is removed from the crude oil produced by first distillation of the chips of wood, leaving behind safrole-rich oil. The plants have glossy, light-colored veins on their dark to light green leaves. These measure 3 to 7 cm wide and 8 to 15 cm long. The leaves have penninerved, dormant buds that form a thick, silky, orbicular, imbricating ring around them. When crushed, these release a potent scent. The leaves have a wide range of shapes. It demonstrates many shapes, from ovate to lengthy. On twigs, they all grow in alternating directions. The plant's actinomorphic, bisexual, white, and hermaphrodite blooms have terminal panicles at the tips of the branches. The flowers have a single ovary with a locular, basal ovule, and highly distinct, free stamens. *Cinnamomum camphora*, also referred to as camphor laurel, is a common plant in China, Japan, and Taiwan. Camphor compound crystallises from the oily portion of the distillate and can be extracted by running steam through ground condensing and wooden the vapours. It is then refined by sublimation and pressing. Since the early 1930s, a variety of techniques have been used to create camphor compounds from the -pinene component. Terpenoid ketones, which include camphor, are considered to be an organic chemical group. Organic chemistry in the 19th century faced basic issues with its reactions and unique structural characteristics. This compound of pure camphor is a waxy, white solid that melts at a temperature of around 178°–179° C.

NATURAL CAMPHOR

For ages, wood chips from the appropriate trees have been roasted to release their vapour, which was then condensed by running steam through the crushed wood. This process produces the forest product known as camphor. The majority of By the early 19th century, camphor tree reserves had been exhausted. century, with the only significant stands surviving Taiwan and Japan, where production was far higher than that. When a the British navy entered Anping harbour in 1868, the local British official asked that the Chinese camphor monopoly be broken. The imperial representative in the area refused, so the British attacked the city and seized the harbour. The camphor monopoly was thereafter briefly ended as a result of the "camphor restrictions" that were agreed upon by the two parties. of Japan. One of the main and most profitable resources that Taiwan's colonial powers mined was camphor. Japanese and Chinese monopolies on Taiwanese camphor were first established. Alpha-pinene, which is rich in coniferous tree oils and can be extracted through distillation from turpentine, a byproduct of chemical pulping, is used to make camphor. Alpha-pinene is converted into isobornyl acetate using as the solvent, acetic acid, and strong acid as the catalyst.

SYNTHETIC CAMPHOR

This ester is hydrolyzed to produce isoborneol, which can then be oxidised to produce racemic camphor. Contrarily, the (R)-enantiomer of camphor, D-camphor, is found in nature.

PHYSICAL PROPERTIES OF CAMPHOR

- Camphor has the chemical formula $C_6H_{16}O$.
- It appears as a waxy white solid when detected.
- Camphor has a molecular weight of 154 amu.
- Camphor has a density of 0.992.
- The flavour of camphor is strong and aromatic
- It smells like mothballs.

CHEMICAL PROPERTIES OF CAMPHOR

- Camphor reaches its boiling point about 177 0 C.
- • Camphor melts at a temperature of 2090 C.
- It dissolves in ethanol and oils but not in water.
- Camphor undergoes bromination when it interacts with bromine when there is sulfuric acid, resulting in (+)-9-bromocamphor and (-)-9-bromocamphor.

Camphoria, a dicarboxylic acid, is produced when camphor is subjected to oxidation

BIOSYNTHESIS OF CAMPHOR

Camphor is created during the biosynthesis process from geranyl pyrophosphate by cycling linaloyl pyrophosphate into bornyl pyrophosphate, which is then hydrolyzed to form borneol and then oxidised to make camphor. Camphor is produced through geranyl pyrophosphate biosynthesis

PRODUCTION

Camphor has been created as an item made of trees for ages by condensing the the smoke created when toasting wood chips that are harvested from related trees and cutting out the steam the pulverised wood and condensation of the vapour. By the beginning of the nineteenth century a large number of typical camphor tree stocks had depleted, including the remaining sizable stands with Taiwanese production in Japan and Taiwan significantly outpacing Japanese. The major and among the most profitable resources that the colonial powers of Taiwan mined was camphor compound.

The Taiwanese camphor market has been monopolised by Japanese first, then Chinese. When the local Qing delegate refused to renounce the Chinese camphor monopoly when an army of British sailors approached one of the regional British ambassadors in 1868, a demand from the Anping harbour it. The British then and bombarded the town captured the

harbour. The camphor monopoly was briefly broken after the team behind "camphor regulations" conducted talks with the opposing parties.

PRODUCTS CONTAINING CAMPHOR

The majority of camphor products are available as skin-applyable creams, ointments, or balms. Sprays and liquid bath soaks are available. Some shaving and anti-itch products include camphor. Camphor is an ingredient in several cosmetics like ChapStick, nail polish, and face wash. Insect repellents frequently contain it as a component.

Popular products containing camphor include:

- Tiger Balm
- Vicks VapoRub
- Bengay
- Icy Hot
- Biofreeze

CONTRAINDICATIONS FOR CAMPHOR OIL

The consumption of essential oils is not advised by New Directions Aromatics (NDA) in accordance with NAHA recommendations. Before using this oil for medicinal purposes, you must speak with a doctor. It is strongly advised that women who are pregnant or nursing refrain from using sans camphor essential oil consulting a doctor because it may affect some hormone secretions and it is not known whether these effects will be passed on to developing children. Always keep the oil out of reach of young kids, particularly those under the age of seven. The consumption of essential oils is not advised by New Directions Aromatics (NDA) in accordance with NAHA recommendations. Before using this oil for medicinal purposes, you must speak with a doctor. It is strongly advised that women who are pregnant or nursing refrain from using sans camphor essential oil consulting a doctor because it may affect some hormone secretions and it is not known whether these effects will be passed on to developing children.

Always keep the oil out of reach of young kids, particularly those under the age of seven. This essential oil should be used in conjunction with other medical therapies rather than as a substitute for them if someone needs help managing their moods, behaviours, or problems. If you experience an allergic reaction, stop using the product right away and visit a doctor, pharmacist, or allergist right away for a health evaluation and the ideal action to take. Before using, seek advice from a medical practitioner to avoid negative effects. Indication mental fragility body pain Joint Pain Fever Skin conditions Nervous lassitude eye illness dental paste cough and the flu Convulsions connected to the mouth disorders.

INDIGESTION:

- Abdominal squeezing
- Loss of cardiac muscle strength.
- Urological tract issue
- Poor breath
- Pyorrhea
- Digestion issues
- Microbe-related infections
- Bleeding issues
- Heart issues
- Muscle spasms
- Joint aches
- Mental illness
- Sinusitis
- Chest discomfort
- Obesity

CAMPHOR IN TREATMENT OF CANCER, DIABETES & ALZHEIMER'S:

Since ancient times, camphor has been used both on its own and in combination with other chemicals to cure inflammation and irritation of the skin on the body as well as to relieve pain. It has been used for ages to treat a variety of symptoms, including inflammation, infection, congestion, discomfort, and irritability. Numerous studies have demonstrated that certain Cinnamomum camphora constituents reduce and inhibit the mutagenesis of a range of human cancer cells without endangering healthy cells.

A study on camphor (Cinnamomum camphora), a conventional treatment with a history of treating various diseases, focused on using camphor as a quick household remedy to solve everyday minor issues in addition to learning about the new applications of this traditionally used, naturally occurring medication to treat or prevent some serious acute diseases such as cancer and diabetes.

Karpoor rasa, karpoorasava, ark karpoor, and amritbindu Vayu Gulika are Ayurvedic medications that contain camphor as a component and are used to treat cough, cold, fever, and other conditions. It is mostly used for digestive and respiratory disorders. Fever, cough, and cold treatments using Kombanchadi Gulika Gandhaka Malahara is an ointment for eczema and other itchy skin conditions. Karpoorasava is a remedy for diarrhoea and vomiting. Manasamitra Vatakam is used in Ayurvedic medicine to cure mental illnesses, boost intelligence, address speech issues, etc. Like any other medication, camphor should only be administered to certain patients in accordance with the recommended dosages and exclusions.

The FDA has approved topical anaesthetic and painkiller usage at a concentration of 3-11%. Since Pseudomonas putida and other soil bacteria easily break down terpenoids, such as camphor, they do not build up in the environment. Although

herbal remedies and essential oils have long been used in traditional and contemporary alternative medicine and have proven to be quite successful in treating a variety of symptoms and disorders, improper use of them may be very detrimental to the body and result in major issues. Human intoxication with camphor has been documented, particularly in youngsters, however this is typically

due to accidental intake or using more than what is advised.

2–20 g of camphor is harmful.

Concentrate dosage: 125–375 mg

DOSAGE AND TOXICITY:

Like any other drug, camphor should only be administered to certain individuals according to the recommended dosages and conditions. The FDA has approved topical anaesthetic and painkiller usage at concentrations of 3% to 11%. Camphor and other terpenoids do not build up in the environment because many soil bacteria, such as *Pseudomonas putida*, are capable of quickly destroying them. Although herbal remedies and essential oils have been used extensively in traditional and contemporary alternative medicine for many years and have proven to be very effective in treating a variety of symptoms and diseases, improper use of them can be extremely harmful to the body and result in serious issues.

Human intoxication with camphor has been documented, particularly in young infants, however this is typically due to accidental intake or consuming more than is advised.

IN HOMEOPATHY:

Camphor is referred to as "Camphora" in homoeopathy, which is formed from the chemical camphor. The use of tincture was recommended by Samuel Hahneman, the inventor of homoeopathy, who referred to it as a "divine treatment."

He added that homoeopathic treatments and many other medications' harmful side effects might be reversed by using camphor. Opium can be treated with camphor.

Typically, the specified dosage is administered in the form of. In homoeopathy, camphor 1M is administered for congestion, as a cough suppressor, for sneezing and colds, and in situations of collapse brought on by fever. Since it functions as an antidote to the majority of homoeopathic treatments, it must be administered strictly under medical supervision. It is quite helpful at treating body weakness and alleviating cold symptoms. Additionally utilised as a heart health tonic, it increased cardiac function by increasing blood flow. helpful for those who experience body pain, blocked nose, and headaches with a fever. the history of using camphor to combat epidemics.

PHARMACODYNAMICS

The timber of the *Cinnamomum camphora* tree is the source of the natural substance known as camphor, which has a long history of usage as an antiseptic, analgesic, antipruritic, counterirritant, and rubefacient.

Its popularity and widespread medical application, particularly in topical preparations, are attributed to its mild local anaesthetic effect, the production of a confined heat sensation, and its distinctive and penetrating odour, which is generally associated with the idea of a potent and potent medication. Today, camphor is mostly used as topical analgesics in the form of liniments and balms, as well as inhalants and camphorated oil, a mixture of 19% or 20% camphor in a carrier oil, for the home treatment of colds.

One among the first to be thoroughly researched was camphor's antitussive, nasal decongestant, and expectorant properties. Its nasal decongesting action appears to be related to the activation of the nose's cold receptors rather than being merely mechanical. Pharmacokinetics: All routes of administration, including inhalation, ingestion, and cutaneous exposure, result in rapid absorption of camphor.

Peak plasma levels were attained 3 hours after administration of 200 mg of camphor alone, and 1 hour after ingestion of 200 mg of camphor together with a solvent. As applied topically, how much is absorbed is relatively minimal when compared to how quickly the procedure moves along. The plasma camphor concentrations were measured by selective gas-chromatography after varying total quantity of commercial patches were applied to a human's skin participants for 8 hours. Maximum camphor plasma concentrations ranged from 35.2 to 46.8 ng/ml-1 in the case of 8 patches, from 19.6 to 34 ng/ml-1 for 4 patches, and were nearly undetectable when only 2 patches had been used, demonstrating that dermal absorption is rapid but not huge. It must be advised that the use of this product be avoided during pregnancy and nursing since camphor is dispersed throughout the entire body and can infiltrate the placenta.

CONCLUSION

Since ancient times, people have relied on camphor either alone or in conjunction with other remedies to relieve pain, inflammation, and skin and body irritability. Additionally, certain serious, potentially fatal disorders can be treated and prevented with great success with it. *Cinnamomum camphora* and its constituents should be further researched as a potential treatment for various cancers in light of the rising number of cancer patients

More research is also required pertaining to camphor use in treating patients with memory problems and other brain illnesses like autism and Alzheimer's. Nowadays, a significant amount of the world's camphor is made synthetically from coal tar or pinene, a derivative of turpentine. Camphor has a variety of medical applications and is used to make celluloid, which is utilised in disinfectants and chemical preparations. Safrole, which is made from the leftover oil after camphor extraction, is used to make soap and perfume. Since ancient times, people have used cinnamon (*Cinnamomum camphora*) medicinally to relieve stomach ache, treat urinary tract infections, and relieve toothaches.

. It has been used historically for a wide variety of conditions in numerous cultures, including the treatment of diarrhoea, arthritis, and diverse menstruation diseases.

The numerous medical uses of cinnamon reveal how well-liked its curative abilities are among folk herbalists. It is used in the Indian system of Ayurvedic medicine to treat a variety of illnesses, including bronchitis, colds, and congestion. diarrhoea, dysentery, oedema, gas, and hiccups that are heart-healthy and metabolic digestive and liver issues Menorrhagia, depression, and tight muscles vomiting and nauseous.

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