

**AN OVERVIEW: CHEMICAL COMPOSITION AND PHARMACOLOGICAL ASPECTS OF ESSENTIAL OIL CONTAINING CARROT (UMBELLIFERAE) SPECIES****Dr. Dukre T. P.*, Mr. Sangale S. S., Mr. Shelke A. K., Ms. Thorat P. S., Ms. Vaidya K. D.**

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ABSTRACT

The carrot species (Umbelliferae) having different types of essential oil composition. Since ancient times, essential oils have been utilised to cure a variety of illnesses, and their use has grown in popularity. This paper provides an overview of the pharmacological advantages and chemical makeup of carrot species that possess essential oils. The aromatic plant *Pimpinella anisum*, or *anise*, is a member of the Umbelliferae family and has been used in Iranian traditional medicine as a carminative, aromatic, antiseptic, and galactagogues. In traditional medicine, various portions of *Anethum sowa* L. are used as a carminative to treat infant and kid colic, hiccups, and flatulence as well as an antioxidant, antibacterial, and antispasmodic. One of the well-known and widely-distributed genera in the Umbelliferae family is *Angelica*. Chinese and Korean populations primarily use it, particularly in folk medicine. Numerous medicinally significant phytoconstituents, including coumarins, furanocoumarins, flavonoids, essential oils, verbascosides, and polysaccharides, are present in angelica.

KEYWORDS: Essential oil, Carrot species (Umbelliferous), Anise, Dill, Angelica, etc.**INTRODUCTION**

Plants contain essential oils in a variety of places, including pockets and reservoirs, glandular hairs, specialised cells, and even intercellular spaces. The plants' evaporation of essences protects them against bacterial attack, while the essences' warming aura defends the plant from temperature changes. (Krishna et al., 2000) The relevance of the essential oils has emerged as a fragrance with therapeutic potential for the body, mind, and soul. These fragrance molecules are extremely potent organic plant chemicals that keep the environment free of fungus, bacterium, and other pathogens. Numerous scientists have well-documented their diverse properties, which include antibacterial, antiviral, and anti-inflammatory natures as well as immune booster bodies with hormonal, glandular, emotional, circulatory, relaxing effect, memory, and alertness enhancer. It can be used in aromatherapy like: cosmetic aromatherapy, massage aromatherapy, medical aromatherapy, olfactory aromatherapy, psycho aromatherapy, etc. (Baber Ali et al., 2015).

A complex mixture of terpenic hydrocarbons, particularly monoterpenes and sesquiterpenes, as well as oxygenated derivatives including aldehydes, ketones, epoxides, alcohols, and esters make up essential oils, which are secondary metabolites of plants. The chemical makeup of different essential oils varies tremendously.

(Kiran CR et al., 2013) Even the chemical makeup of essential oils collected from plants belonging to the same species varies depending on the region.

The maturity of the plant from which the essential oils are taken also affects composition. The chemical makeup of essential oils and the placement of one or more functional groups on the molecules that make them up determine how they work. (Dagli et al., 2015)

Members of the following plant belong to carrot families are among the plants renowned for their essential oils and utilised as a source of perfumes and flavorings: such as anise, dill, angelica.

MATERIAL AND METHODS**1. Anise**

Botanically anise is known as *Pimpinella anisum*. One of the first medicinal plants is the annual herb *Pimpinella anisum* L., which is a member of the Umbelliferae family. It is an annual grassy plant that grows in Mexico, Egypt, Spain, West Asia, and the Eastern Mediterranean. It has little green to yellow seeds, white flowers, and a height of 30 to 50 cm. *Pimpinella anisum* is primarily cultivated for its seeds, or fruits. (Ozcan et al., 2006).

Chemical Composition

Anise fruit contain Anethole (90%), γ -himachlene (2–4%), p-anisaldehyde (1%), methylchavicol (0.9–1.5%), cis-pseudoisoeugenyl 2-methylbutyrate (3%), and trans-pseudoisoeugenyl 2-methylbutyrate (1.3%) were the main chemicals. Aniseed was used to isolate neophytadiene, a brand-new terpene hydrocarbon. (Singh *et al.*, 2021).

Pharmacological aspects

Numerous nations utilise anise in traditional medicine to treat neurological, pulmonary, and gastrointestinal conditions as well as to act as a natural oestrogen. Recent research has revealed that it possesses anticancer, antioxidant, and antibacterial effects, and in many nations anise is listed as an official medication in the pharmacopoeias. Anise is frequently advised as a digestive aid, carminative, and to help regulate digestion. (Singh *et al.*, 2008).

2. Dill

Dill is also known as *Anethum sowa*. Since ancient times, people have employed herbs and spices that are widely grown around the world for both culinary and medicinal uses. *Anethum sowa* L. (Bengali- Shulfa), a member of the genus *Anethum* and of the Apiaceae (Umbelliferae) family, is cultivated in Bangladesh as an annual winter spice. It is primarily grown in Bangladesh's northern region. Indian dill, also known as sowa, is a kind that is mostly grown in Bangladesh, India, Egypt, and Japan. It is a spice that indigenous people use as a flavour ingredient in food preparation. The plant often reaches a height of 2 to 2.5 feet and has tiny feathery leaves and tapping, branched roots. (Chopra *et al.*, 1192).

Chemical Composition

The two chemotypes of dill, European dill (*Anethum graveolens* L.) and Indian dill (*Anethum sowa* L.), differ in the chemical composition of their essential oils mostly due to the presence of apiol and carvone. While *Anethum graveolens* is rich in carvone, *Anethum sowa* is rich in apiol. Dill ether (anethofuran) and -phellandrene, along with limonene, give dill herb oil its characteristic flavour. (Radulescu *et al.*, 2010).

Pharmacological Aspects

The green herb, its seeds, and its roots are used as folkloric medicine, including as an aromatic and a carminative that is particularly effective in treating infants' and kids' flatulence, colic, and hiccups. Seed essential oils have recently been discovered to have antibacterial, antispasmodic, and possible antioxidant effects. (Sing *et al.*, 2005).

3. Angelica

The family Apiaceae (Umbelliferae), which includes 60 to 90 species of biennial perennial herbs and is extensively spread in Asia, Europe, and North America, includes the genus *Angelica*. Out of 90 species, 45 (about 32 indigenous species) are found in China. In Southwest Asia, plants in the genus *Angelica* are referred to as

"women's ginseng" and are used to cure amenorrhea and dysmenorrhea, menopausal problems, hypertonia, anaemia, and vascular dystonia; these plants are recognised as edible in many nations. One of the most significant species of the genus *Angelica*, particularly for its roots, is *Angelica dahurica*. (Lechner *et al.*, 2004).

Chemical Composition

Essential oils, coumarins, furanocoumarins, phthalides, polysaccharides, benzofurans, polyacetylenes, and many more phytochemicals made up the majority of the compounds. With further information on *Angelica dahurica*, the aforementioned chemical classes will be discussed in this context. Members of the genus *Angelica*, particularly its roots, have been reported to contain several essential oil constituents. The main documented components of essential oils included trans-carveol, p-cymene, b-ocimene, alpha- and beta-phellandrene, limonene, and pinene. (Shchipitsyna *et al.*, 2011).

Pharmacological Aspects

The *Angelica* reported the therapeutic effect in Analgesic and Anti-Inflammatory Activity, Cytotoxic Activity, Anti-Oxidant Activity, Antimicrobial Activity, Effects on Cardio- and Cerebrovascular Systems, Neuroprotective Action, Immune Support and Hematopoiesis, Antifibrotic Action, Antispasmodic Activity, Hepatoprotective Activity, Antidiabetic, Estrogenic Activity and Insecticidal Activity. (Saber Batiha *et al.*, 2022).

CONCLUSION

It has been shown in this review that there is a lot of evidence that essential oils could be used to treat or prevent a variety of oral disorders. The essential oil of *Pimpinella anisum* to identify the chemical compounds and pharmacological properties of this plant, and various properties such as antimicrobial, antifungal, antiviral, antioxidant, and insecticidal effects. we have found the *Anethum sowa* L. root as a rich source of mineral constituents along with amino acids. Inorganic elements remain complexed with organic ligands and make them bioavailable to the body system. The biological and phytochemical activities of the genus *Angelica*, with a focus on *Angelica dahurica* as one of the most significant plant genera with a variety of traditional therapeutic applications. With roughly 32 of them recorded only from *Angelica dahurica*, the genus *Angelica* is particularly rich in coumarins and furanocoumarins, followed by phthalides and polysaccharides. These phytoconstituents demonstrated a wide range of biological properties, primarily those that are antibacterial, antioxidant, anti-inflammatory, hepatoprotective, insecticidal, and antidiabetic.

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