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## A REVIEW ON PHYTOCONSTITUENTS AND MEDICINAL USES OF DHAVANA

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### ABSTRACT

Plants produce a diverse range of bioactive molecules, making a rich source of different types of medicines. Natural products play an important role in drug development programs in the pharmaceutical industries. *Artemisia pallens* commonly known as Dhavana is an aromatic herb belonging to the family *Asteraceae*. This review examines the ethno botany, Phytochemistry, medicinal uses, and pharmacological evaluation studies of *Artemisia Pallens*. Phytochemical studies of the root, stem, bark, leaves, fruits, seeds and seed oil of *Artemisia pallens* showed the presence of alkaloid, phenols, phenylpropanoids, glycosides, lignans, flavonoids, saponin, triterpene, steroids, fatty acids, fatty esters hydrocarbons and miscellaneous compounds which could be used in traditional medicines to cure various health issues. Many of which are responsible for various biological activities such as analgesic, anti-parasitic, anti-inflammatory, hypolipidemic, anti-nociceptive, anti-microbial, anti-oxidant, hepato-protective, anti-ulcerogenic, anti-malarial, anti-leishmanial, anti-cancer, anti-tumor, anti-diabetic, anticonvulsant, anti-promastigote, anti-convulsant, anxiolytic and anti-depressant. *Artemisia pallens*, phytochemicals shows both antibacterial and antifungal activity and is used to treat disease caused by *Bacillus lentus*, *Bacillus subtilis*, *Escherichia coli*, *klebsicella pneumonia*, *Salmonella paratyphi* and fungal strains like *Aspergillus niger*, *Aspergillus parasiticus* and *Monascuspurpureus*<sup>1,2,6</sup>.

### KEYWORDS

*Artemisia Pallens*, Phytochemistry and Pharmacological Evaluation.

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### INTRODUCTON

*Artemisia Pallens*, commonly known as Dhavana is an aromatic herb found abundantly in humid habitats in the plains all over India. They are invariably found as small fragrant shrubs or herbs and most of them yield essential oils. *Artemisia Pallens* has been widely used in Indian folk medicine for the treatment of diabetes mellitus and cancer<sup>1</sup>.

It is commercially cultivated for its fragrant leaves and flowers. It grows from seeds and cuttings and reaches maturity in four months. The plant is woody in the lower part of the stem, but with yearly branches. Dhavana is mostly cultivated in the red soil regions in South India. It comes up very well in rich loamy soils. Dhavana is an annual herb, family compositor, requiring about four months to reach maturity, at which it attains a height of about around one and half feet. Season is very important when the crop is grown for production of oil. The crop is allowed to grow until it flowers, which take about 4 months from sowing. It is grown as short term crop from November to February/March and as a rotation crop extending up to April/May. In large scale distillation, an average yield of 3.2 -3.5% from a material dried. The maximum oil content in dhavana is in the flower head and is much less in the leaf and stem<sup>1,3,6</sup>.

#### **Phytochemical Screening**

Analysis of phytochemical constituents in the *Artemisia Pallens* by chemical analysis.

#### **Alkaloids**

1ml of 1% HCL was added to 3ml of the extract in a test tube. The mixture was then heated for 20 minutes, cooled and filtered. About 2 drops of Mayer's reagent was added to 1ml of the extract. A creamy precipitate was an indication of the presence of alkaloids<sup>5</sup>.

#### **Tannins**

1ml of freshly prepared 10% Pb (CH<sub>3</sub>COO)<sub>2</sub> was added to 1ml of the extract. Presence white precipitate showed the absence of tannins<sup>5</sup>.

#### **Phenolic compounds**

Two drops of 5% FeCl<sub>3</sub> of the extract in a test tube. Presence of greenish precipitate indicated the presence of phenolic<sup>5</sup>.

#### **Glycosides**

10ml of 50% H<sub>2</sub>SO<sub>4</sub> was added to 1ml of the extract and the mixture heated in boiling water for about 15 minutes. 10 ml of Fehling's solution was then added and the mixture boiled. A brick-red precipitate was confirmatory for the presence of glycosides<sup>5</sup>.

#### **Flavonoid**

1 ml of 10% NaOH was added to 3ml of the extract. There was yellow colouration which is indicative the presences of flavonoids<sup>5</sup>.

#### **Steroids**

Salkowski test: 5 drops of concentrated H<sub>2</sub>SO<sub>4</sub> was added to 1 ml of the extract in a test tube. Red colouration was observed which is indicative for the presence of steroids<sup>5</sup>.

#### **Saponin**

(i) Frothing test/Foam Test: 2ml of the extract was vigorously shaken in the test tube for 2 minutes. Frothing was observed<sup>5</sup>.






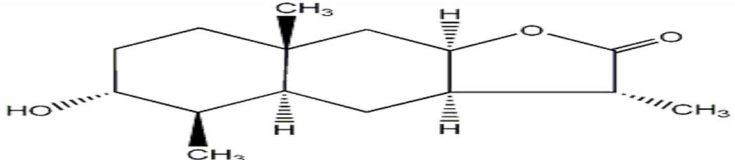
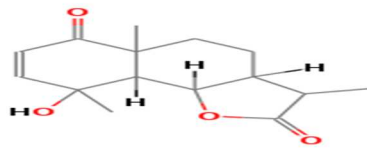
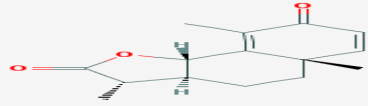
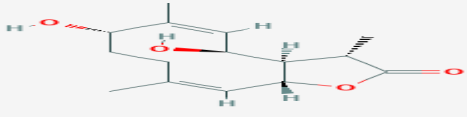

(ii) Emulsion Test: 5 drops of olive oil was added to 3ml of the extract in the test tube and vigorously shaken. Presence of stable emulsion formed indicates the presence of saponin<sup>5</sup>.

#### **Phytochemical Constituent**

The chemical constituent of *Artemisia Pallens* are saponin alkaloids, sterol glycosides, davanone, isodavanone, linalool, dehydro- $\alpha$ -linalol, terpinen-4-ol, davanafurans, Artemone, eudesmanolide, pallensin and epipallensin, santonin, germacranolide, Artesin (sesquiterpene ketones), stereo isomers hydrocarbons, ester, oxygenated compounds, tannins, mucilage and phenols<sup>1,3,5</sup>.

#### **Medicinal uses**<sup>1,17</sup>

- Davana oil is used in making perfumery and fragrances.
- Davana oil is soothing to rough, dry, chapped skin, skin infections and cuts.
- *Artemisia pallens* is a preferred food for the larvae of a number of butterfly species.
- Davana has been traditionally used in Indian folk medicine for the treatment of diabetes mellitus,
- Wound healing, immunomodulating, anthelmintic, antipyretic and wound healing.
- It is used as an aphrodisiac and mood elevator.
- It is a remarkable antiseptic.
- This oil also has mild insect repellent property.
- It is effectively used to reduce the risk of chronic diseases, cardiovascular disorders and cancer.

Chemical Constituent	Structure
Davanone <sup>[15]</sup>	
Linalool <sup>[14]</sup>	
Terpinen-4-ol <sup>[10]</sup>	
Davanafurans <sup>[9]</sup>	
Artemone <sup>[8]</sup>	
Eudesmanolides <sup>[16]</sup>	
Pallensin <sup>[12]</sup>	
Santonin <sup>[11]</sup>	
Germacranolide <sup>[13]</sup>	
Artesin <sup>[7]</sup>	

## CONCLUSION

The present review highlight the various phytoconstituents and traditional uses of *Artemisia Pallens*. In the recent years natural products plays an important role on drug development programmes in various pharmaceutical industries.

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## CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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