



## PHYTO CHEMICAL ANALYSIS OF ARTEMESIA NILAGIRICA LEAF EXTRACT

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### ABSTRACT

Extract from the leaves of *Artemisia nilagirica* are investigated for phyto chemical and anti oxidant activity. Extracts from leaves of *Artemisia nilagirica* investigated for phytochemical constituent and anti oxidant activity. Leaf Extract with ethyl Alcohol revealed the presence of tannins, flavonoids, alkaloids, terpenoides, saponins, cardiac- glycosides, in the *Machipatri*. In view of the presence of antioxidant properties of the plant, it is aimed to understand whether the plant can be use of in fighting the malignancy and other cancer causing agents.

**Keywords:** *Artemisia nilagirica*, anti oxidant activity, phytochemical, cancer causing agents.

### INTRODUCTION

*Artemisia Nilagirica* is popularly known as 'Makkipu' and 'Masipattiri' in Tamil. It is an aromatic, herbaceous perennial plant belongs to Asteraceae family, which grows up to 150 cm on nitrogenous soils in hilly areas of India. *Artemisia Nilagirica* is used in traditional medicine for the treatment of various ailments such as poor appetite, indigestion, constipation, travel sickness, parasitic infection, irregular menstruation, menstrual pain, cold, epilepsy, typhoid, tuberculosis, urinary calculi, colic, fever, asthma, bronchitis, anaemia, leprosy, pruritus, malaria, fungal infection, leishmaniasis and cancer (N. PavalaRani). *Artemisia nilagirica* (Clarke) pamp commonly called Indian worm wood, is widely found in the hilly areas of India. *A. nilagirica* has been reported to exhibit insecticidal activities. Various species of *Artemisia* have been characterized for their biological activities (Vijayalakshmi. Aet.al) In recent year, much effort has been applied to the synthesis of potential anticancer

drug. For this, there is a continued need for new prototypes new templates to use in the design of potential chemotherapeutic agent. Natural products are providing such templates. (Devmurari V.P.et al). The essential oil of *A. nilagirica* contains camphor,  $\beta$ -caryophyllene, D-germacrene,  $\alpha$ -humulene, 1,8-cineole,  $\beta$ -eudesmol, borneol, artemisia alcohol, camphene,  $\alpha$ -gurjunene, p-cymene, terpinen-4-ol,  $\alpha$ -pinene,  $\alpha$ -phellandrene,  $\delta$ -carene, trans-isoelemicin, lyratol,  $\gamma$ -elemene, (-)-linalool, thujone, azulene, thujyl alcohol, fernenol, stigmasterol, sitosterol, amyrin and its acetate( R. Badoni .et al). Traditionally, the plant and its parts are used by the tribes for the treatment of various ailments such as poor appetite, indigestion, travel sickness, parasitic infection and cold (Darsana Udayan et al). A tall aromatic perennial shrub, often gregarious, pubescent or villous throughout; lower leaves ovate in outline deeply pinnatisect with small stipule-like lobes at the base, pubescent above, white tomentose beneath, upper most smaller, 3-fid or entire, lanceolate; paniced racemer, outer flowers female, very slender, inner disk flowers fertile, bi sexual, bracts ovate or oblong, margins scarious fruits oblong ellipsoid minute achene's. Plant Contain sesquiterpene lactones, exiguaflavone A and B, macckianin and 2-(2,4- dihydroxyphenyl)-5,6-methylenedioxy benzofuran( Devmurari V. P.et al). The odour of the plant is powerful, fresh camphoraceous, with a cedar- leaf-like top note and sage rosemary-like body note. The flavour of the oil is warm, almost pungent and bittersweet, with a slight cooling effect in higher dilution; traditionally it is used as an emollient, soothing agent and muscle relaxant (Aniruddha Sarma et al). Leaves are haemostatic and they relieve burning sensation in conjunctivitis . The leaf is emmenagogue, menstrual regulator, nervine tonic, stomachic (in anorexia and dyspepsia), anthelmintic, choloretic, diaphoretic. Its essential oil has good larvicidal action(R. Shakila et al). A large number of members of the Anthemideae tribe are important as cut flowers and ornamental crops, as well as medical and aromatic plants, many of which produce essential oils used in modern medicine, and in the cosmetics and pharmaceutical industry. Secondary metabolism in a plant not only plays a role in its survival by producing attractants for pollinators, but it also acts as a chemical defence against predators and disease(María José Abad et al).

## MATERIALS AND METHODS

Plant material was collected from the college campus. Chemicals such as wagner reagent, chloroform, 2% H<sub>2</sub>SO<sub>4</sub>, Concentrated sulphuric Acid, 10% Lead acetate, Benedict's reagent, 0.1% ferric chloride, Fehling's solution, dilute NaOH, 2% HCL, 10% Ammonia, 10% HCL, distilled water, Ethyl Alcohol are provided by the management of the college.

**Preparation of solutions:** a) Fehling's solution:- A mixture of equal volume of copper sulphate, sodium potassium tartar ate and sodium hydroxide is prepared in a beaker.

b)Wagner's Reagent:- Mixing 2gm of Iodine, 6gm of potassium iodide in 100ml of water.

**Collection of sample:** Healthy leaves of *machipatri* were taken and washed under running water to remove the dust and other external pollutants. The plant leaves were air dried for few days (normally 15 to 21days).

**Grinding the sample:**The dried leaves are grinded to a fine powder in a mixer and the powder is collected in clean polythene bags.

**Preparation of plant extract with ethyl Alcohol:**\_Taken 10 gms of leaf powder and added 50ml of ethyl alcohol stirred it constantly for 30 minutes and the solution was kept at room temperature for 24 hours (minimum) and then filtered. The filtered solution is again filtered with watman filter paper No.3 and then it was stored at 4 degrees centigrade (in a freezer) until use.

## TESTS AND RESULTS

a) **Phyto chemical screening:** Chemical test is carried out on the ethyl alcohol extract of clove tulasi using standard procedures to identify the constituents.

b) **Procedure for alkaloids:**\_2ml of extract is taken and added 2ml of wagner's reagent a brownish precipitate indicate the presence of alkaloids.

c) **Cardiac glycosides:** 2ml of extract is dissolved with 2ml of chloroform and concentrated sulphuric acid is carefully added to form a layer. Deep reddish brown colour at the inter face of steroid ring indicates the presence of cardiac glycosides.

d) **Flavonoids:**\_2ml of extract is treated with 2 ml of 10%lead acetate. Yellowish green colour indicates the presence of flavonoids.

e) **Saponins:**\_2ml of extract is dissolved with 2ml of Benedicts reagent. Blue black ppt indicates the presence of saponins.

f) **Tanins:**\_2ml of extract is treated with 0.1% of ferric chloride. Brownish green indicates the presence of tannins.

**g) Terpenoides:** (Salkowski test) 2ml of extract is dissolved with 2ml of chloroform and concentrated sulphuric acid is carefully added to form a layer. A reddish brown colour indicates the presence of terpenoids.

**h) Anthraquinones:** 1ml of extract is boiled with 10% HCL for few minutes in a water bath. It is filtered and allowed to cool. Equal volume of CHCl<sub>3</sub> is added to the filtrate few drops of 10% Ammonia is added to the mixture and heat. Formation of rose pink colour indicates the presence of anthraquinones.

### **Human usage and disease management**

- Alkaloids are anaesthetic agents and found in medicinal plants.
- Cardiacglycosides are strong and direct action on the heart, kidneys and used for diuretic and lowering the blood pressure.
- Flavonoids are anti oxidant elements strengthen capillary volves of heart and improve blood circulation.
- Saponins are useful as expectorants, anti bacterial and anti viral.
- Tanins draw the tissue closure together and fights infection.
- Terpenoids are useful as aromatic agents and used for flavouring the food
- Anthraquinins are having laxative properties and useful to large intestine.

A threatened species s are the main stay of the alternative system of medicine. *Artemisia nilagirica* is commonly known as the Indian wormwood, family Asteraceae, found in the hilly areas of India. The plant has shown noticeably significant pharmacological activities. Traditionally, it is used in management of epilepsy, nervous disorders, as diuretic, anti-inflammatory and skin disorders. In the recent past, various actions of aerial parts are studied and it was found to possess antimicrobial, antifungal, antibacterial, antifilarial, insecticidal, antiulcer, anticancer, antioxidant and anti-asthmatic activity. Camphor, 1,8-cineole,  $\beta$ -eudesmol, artemisia alcohol,  $\alpha$ -gurjunene, para-cymene, terpinene-4-ol and  $\alpha$ -pinene are main essential oil constituents in *A. nilagirica*. Oil possesses antifungal, antimicrobial, insecticidal and larvicidal activity. These evidences prove that the whole plant is of great therapeutic value. The future prospect includes pre clinical studies on the aerial parts as well as root.

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