

# Phytochemical screening of bioactive compounds of *Artemisia nilagirica* (Clarke) Pamp

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## ABSTRACT

Among the natural sources of medicinal and aromatic plants in India, the genus *Artemisia* comprises of 400 species and they found to be abundant in South Africa and South America. Around 35 species are found in India which are of high therapeutic value and are used in traditional medicine. *Artemisia nilagirica* (Clarke) Pamp is an aromatic herbaceous perennial plant belongs to Asteraceae family used herb in Indian traditional medicinal for the treatment of various ailments. In the present investigation, the various parts (Leaves, stem, flower and root) of *Artemisia nilagirica* (Clarke) Pamp plant was segregated, dried, powdered and stored for further investigation. In the present study, a known amount of powdered leaves and flower sample were subjected for qualitative screening of bioactive constituents by standard methods, using four different solvents (Hexane, Ethyl acetate, Methanol and Water). Around 16 phytochemical analyses were carried out to identify their presence in leaves and flower samples. On comparative study, Methanol recorded the highest number of phytochemical constituents in both leaves and flower sample. From the above results, Leaves showed positive results for tannins, flavonoid, saponins, alkaloids, coumarins, phenols and steroids. Flower showed positive results for tannins, flavonoids, saponins, terpenoids, alkaloids, coumarins and phenols.

**Keywords:** Bioactive, Screening, Metabolites, Medicinal, Phenols.

## INTRODUCTION

In recent years, traditional system of medicinal has become a topic of globe importance wherein the phytochemicals play a major role in the adaption of plant to their environment and represent an important sources of pharmaceutical (Ramachandra RS and Ravishankar GA, 2002). India has 15 agroclimatic zones and 17000-18000 species of flowering plants of which 178 species have annual consumption level in excess of 100 metric tons (Devika R and Justin , 2012). Secondary metabolites can be classified on the basis of chemical structure containing nitrogen or not their solubility in various solvents or pathways by which are synthesized (Bidlack and Wayne R, 2000). The antioxidant activity of phenolic compounds is mainly due to their redox properties in adsorbing and neutralizing free radicals, quenching singlet and triplet oxygen or decomposing peroxides (Winkle-Shirley B, 2001). In the present investigation, qualitative phytochemical analysis of *Artemisia nilagirica* (Clarke) Pamp has been carried out to identify the therapeutic value.

## MATERIALS AND METHODS

The identified plant of *Artemisia nilagirica* (Clarke) Pamp was collected from Theni District, Tamilnadu, South India. The plant was identified and authenticated by the taxonomic expert from the institute of Herbal Science, Plant Anatomy Research Centre. A voucher specimen (No.PARC/2014/2208) has also been deposited in the herbarium of the institute for further references. In the present investigation, an attempt has been made on the qualitative phytochemical analysis with *Artemisia nilagirica* (Clarke) Pamp which is known for its high therapeutic value. Various parts of plant were powdered and stored in air tight containers for analysis. In the present study, Leaves and Flower powdered sample were subjected to various phytochemical screening by standard methods. About 16 phytochemical analysis such as Carbohydrates (Sofa Wora A, 1993), Tannins (Harborne JB, 1973), Saponins (Somolenski SJ, *et al*; 1998), Flavonoids, Cardiac glycosides, Terpenoids, Phlobatannins, Anthraquinones (Kapoor SL and Shrivastava, 1969), Alkaloids (Sonali and Shekhawat GS, 2010), Quinones, Phenols and Coumarins (Ayoola GA, 2008).

## RESULTS AND DISCUSSION

The Leaves and Flower sample of *Artemisia nilagirica* (Clarke) Pamp was air dried and powdered and subjected to qualitative phytochemical analysis with four solvents such as Methanol, Ethylacetate, Hexane and Water and the results are tabulated for flower in the Table 1 and leaves in Table 2. About 16 phytochemical analysis were carried out with the Flower and Leaves sample.

The analysis of *Artemisia nilagirica* (Clarke) Pamp flower sample with hexane solvents showed 3 positive (Saponins, Tannins, Phenols) presence of bioactive compounds whereas leaves sample resultant with 4 bioactive compounds (Tannins, Saponins, Flavonoids, Phenols). The analysis of flower sample with ethyl acetate solvents showed 5 positive constituents and consequently with Leaves sample, 3 positive constituents were found which have been tabulated in Table 1 and 2. The analysis of *Artemisia nilagirica* (Clarke) Pamp flower sample with methanol solvent showed positive results for Tannins, Saponins, Flavonoids, Alkaloids, Cardiac glycosides, Coumarins and Phenols whereas methanol solvent with leaves resultant in Phenols, Steroids, Tannins, Saponins, Flavonoids, Alkaloids, Terpenoids and Coumarins. As water is believe as universal solvent and examination with Flower and Leaves samples showed four positive bioactive constituents for both the sample have been tabulated in Table 1 and 2. The phytochemical screening of all extracts showed that the leaves and flower was rich in tannins, flavonoids, saponins, terpenoids, alkaloids, coumarins and phenols. These compounds may possibly use for several medicinal activities.

**Table.1.Phytochemical analysis of Flower of *Artemisia nilagirica* (Clarke) Pamp**

Phytochemicals	Flower Sample			
	Hexane	Ethyl acetate	Methanol	Water
Carbohydrates	-	-	-	-
Tannins	+	+	+	+
Saponin	+	-	+	-
Flavonoid	-	+	+	+
Alkaloid	-	+	+	+
Quinones	-	-	-	-
Glycosides	-	-	-	-
Cardiacglycosides	-	-	+	-
Terpenoids	-	-	-	-
Triterpenoids	-	-	-	-
Phenols	+	+	+	-
Coumarins	-	+	+	-
Proteins	-	-	-	-
Steroid&phytosteroid	-	-	-	S+
Phlobatannins	-	-	-	-
Anthraquinones	-	-	-	-

(-ve) Absent (+ve) Present

**Table.2.Phytochemical analysis of Leaves of *Artemisia nilagirica* (Clarke) Pamp**

Phytochemicals	Leaves Sample			
	Hexane	Ethyl acetate	Methanol	Water
Carbohydrates	-	-	-	-
Tannins	+	+	+	+
Saponin	+	-	+	+
Flavonoid	+	+	+	-
Alkaloid	-	+	+	-
Quinones	-	-	-	-
Glycosides	-	-	-	-
Cardiacglycosides	-	-	-	+
Terpenoids	-	-	+	-
Triterpenoids	-	-	-	-
Phenols	+	-	+	+
Coumarins	-	-	+	-
Proteins	-	-	-	-
Steroid&phytosteroid	-	-	S+	-
Phlobatannins	-	-	-	-
Anthraquinones	-	-	-	-

(-ve) Absent (+ve) Present

## CONCLUSION

From the present investigation, *Artemisia nilagirica* (Clarke) Pamp proved to have high therapeutic value by registering Flavonoids, Phenols, Terpenoids and Saponins which are of medicinal value and has their importance from the ancient times. The preliminary screening of bioactive compounds had paved a way for further investigation of these compounds towards the usage in commercial application in future.

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