

Ethnopharmacological properties of *Artemisia* genus used by the traditional healers of Kashmir

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ABSTRACT

Herbal and Ayurvedic drugs have become a subject of world importance, with both medicinal and economic implications. A regular and widespread use of herbs throughout the world has increased serious concerns over their quality, safety and efficacy. Thus a proper scientific evidence or assessment has become the criteria for acceptance of herbal health claims. *Artemisia* plant genus, a natural inhabitant of Kashmir, is well known for its medicinal properties. However, many *Artemisia* species have not been so far scientifically proved. Ten *Artemisia* species are popularly used among Kashmiri people as food, fumigants and medicines. The main and accessible among them are *Artemisia annua*, *Artemisia absinthium*, *Artemisia amygdalina*, *Artemisia maritima*, *Artemisia roxburghiana* and *Artemisia sieversiana*.

Key words: Ethnopharmacological, *Artemisia*, Traditional healers, Kashmir

1. INTRODUCTION

Generic name 'Artemisia' is derived from 'Artemis', which refers to Diana, a Greek Goddess. The name of the Goddess 'Artemis' was given to the genus because one of the species *A. vulgaris*, L. was much used in medicine for women's disease in folk remedy (Takeda, 1971). The genus *Artemisia* L. is a member of the tribe Anthemideae of the family Asteraceae. This genus belongs to a useful group of medicinal and aromatic plants comprising of about 500 species most of which are distributed in North America, Europe, Asia and North Africa (Shah, 1992, 1996, 1997). There are about 45 species of *Artemisia* found in India and are mostly confined to North Western Himalayan region (Ashraf, 1985). *Artemisia* species are popular from the chemical, pharmacological and taxonomic point of view (Ferreira et. al., 2004) and have been used for the treatment of diseases like hepatitis, cancer, inflammation and infections by fungi, bacteria and viruses (Asad, 2011). The genus *Artemisia* is known to contain many bioactive compounds such as artemisinin which possesses antimalarial and cytotoxic activity against tumor cells (Bilia, 2006), arglabin another bioactive molecule is used for treating certain types of cancer in the former USSR (Naqvi et. al., 1991).

There are about 8-10 species of this plant such as *A. amygdalina*, *A. annua*, *A. absinthium*, *A. maritima*, *A. roxburghiana* and *A. sieversiana* which grow in wild low lying areas of the valley. Its plant is a short perennial herbaceous one with greyish white leaves (Qureshi et. al., 2006). Its medicinal value is attributed to active

substances *absinthin* and *ana-absinthin* which is found in abundance in the plant (Arceusz, 2010). All parts of this plant are used- from leaves to seeds- in one form or the other (Ling, 1991).

II.MATERIALS AND METHODS

Methodology and Field Surveys

The research was conducted in several potential stands of the valley. For data collection 45 informants, mostly native to the area mainly farmers, shepherds and housewives and Hakeems were interviewed. Interpretation of the data received into technical or medicinal terms was carefully avoided so as to have a true picture of customs and uses. The information was usually imparted in the local dialect, and the plants were indicated with vernacular names. The informants were aware of the aims and the end use of information they provided. They also collaborated in collecting the recognising plant species. Moreover, they also indicated, where plant species were easily available. After having collected the species, the lists were prepared and then identified. The voucher specimens were submitted to PCAD Research Laboratory, SSL Jain, PG College, Vidisha (MP) for future references.

The experimental design followed by the workers for documentation of Traditional Knowledge of different native ethnic groups of Kashmir included following steps;

- 1) Preliminary field visits and surveys to get plant specimens from the selective study areas.
- 2) Photographs and voucher herbaria for correct scientific identification and nomenclature.
- 3) Questionnaire from older people, women and knowledgeable young people to get primary raw data (Local names, parts used, recipe).
- 4) Confirmation of the obtained indigenous information from local herbalists (Pansaries/grocers) and herbal doctors (Hakeems).
- 5) Systematic tabulation and documentation of secondary data.
- 6) Submission of herbaria in relative funding department/ university.
- 7) Publication of the qualitative and qualitative data in a systematic way showing their taxonomy (Local name/English name, family) and their uses (Parts used and recipe).

III.OBSERVATIONS

In this research work, we have observed six *Artemisia* species which are utilized by local communities of different localities in different ways. Plant descriptions and distributions are described below;

1. ***Artemisia absinthium*:** *Artemisia absinthium* plant grows naturally on uncultivated, arid ground, on rocky slopes, and at the edge of footpaths and fields. It is a herbaceous, perennial plant with fibrous roots, The stems are straight, growing to 0.8-1.2 metres tall, grooved, branched and silvery-green. The leaves are spirally arranged, greenish-grey above and white below the flowers are pale-yellow, tubular and clustered in spherical bent-down heads. The fruit is a small achene. Seed dispersal is by gravity. As a medicine, the plant is used for

dyspepsia, as a bitter to counteract poor appetite, for various infectious diseases, Crohn's disease and IgA nephropathy.

2. ***Artemesiaannua*:** *Artemesiaannua* is an annual short day plant with brownish-violet brown erect stem. The plant itself is hairless and naturally grows from 30-100 cm tall. Leaves are divided by deep cuts into two or three small leaflets and are 3-5 cm in length. The plant has small green-yellowish flowers with a diameter of 2-2.5 mm and are arranged in loose panicles. The plant is traditionally used to treat fever and malaria. It has also antioxidant activity.

3. ***Artemisia amygdalina*:** *Artemisia amygdalina* Decne locally known as "Veer Thethven" (Kashmiri name) is a critically endangered and endemic species of the Himalayan region and Kashmir. It is a tall, stout stemmed leafy aromatic perennial herb with simple serrate leaves which are hoary tomentose beneath and glabrous green above, flower heads 2-3 mm borne in short axillary racemes. In the traditional system of medicine, the plant is used by locals for the treatment of cough, cold, worms etc. It is also used as vermifuge. Despite being a very important ethnomedicinal angiosperm species, the plant has received little attention and is now restricted to small pockets of the Kashmir Himalayas.

4. ***Artemesiamaritima*:** *Artemesiamaritima* is a deciduous shrub growing in tropical climate and grows upto 60 cm tall. It resembles somewhat *Atemesiaabsinthium* but can rise about a foot or 18 inches in height. The leaves are twice pinnatifid, with narrow linear segments and are covered on both sides with a coat of white cottony fibres. The flowers are small, yellowish or brownish tint in color. It was known as 'kirmani' in Bombay by the Hakims, who prescribed the plant as an anthelmintic and deobstruent and as a stomachic.

5. ***Artemesiaroxburghiana*:** *Artemesiaroxburghiana* is a perennial herb which can be identified by its creeping rootstock, its simple stem with deeply dissected woolly or nearly hairless leaves. It is found on the open slopes of the Himalayas at the altitudes of 1000-4300 m. The flowers are tiny and purplish with a diameter of 3-4 mm. Leaves are twice cut with linear pointed segments usually more than 2 mm broad.

6. ***Artemesiasieversiana*:** *Artemesiasieversiana* is an annual/perennial growing to 78 cm tall. It is found on the stony ground especially in Ladakh and also in dry areas of Nepal. The leaves are more or less triangular in outline with more acute leaf-lobes and a deep grooved, nearly angled stem. Flowers are 0.6-1.2 mm in diameter. The seeds are 1.2 mm long and oval shaped with flat top.

IV.RESULTS AND DISCUSSIONS

The Ethnomedicinal use of six *Artemisia* species which are utilized by local communities of different localities in different ways are described below;

- ***Artemisia absinthium*:**

1. The dried plant is used to protect clothes against insects and as an insecticide.
2. The whole plant decoction is used as a tonic for general health.
3. Leaf powder is used for gastric problems and intestinal worms.
4. Seed powder is taken orally to treat rheumatism.
5. Seed powder paste is applied on teeth for pain relief.

- ***Artemesiaannua:***
 1. A decoction of the whole plant is used for treatment of Malaria.
 2. Leaves are used for fever, cough and common cold.
 3. Dry powder of leaves is taken to treat diarrhea.
 4. Oil of afsantin is used in local perfumes (ettar) due to its pleasant fragrance.
- ***Artemisia amygdalina:***
 1. Plant is used as antiseptic and anti-inflammatory.
 2. Plant powder works for Diabetes treatment.
 3. Leaves/plant is used to treat burns.
- ***Artemesiamaritima:***
 1. Plant is used as antiseptic and anti-inflammatory.
 2. Leaves are utilized for cooling purposes.
 3. Plant decoction is used against malaria.
 4. Plant powder is used for intestinal worms.
- ***Artemesiaroxburghiana:***
 1. Plant decoction is used in fever.
 2. Plant powder is used for the removal of intestinal worms.
- ***Artemesiasieversiana:***
 1. Plant is used as general Antimicrobial agent.
 2. Plant powder is used as anti-infective agent.

In the present paper the genus *Artemisia* is treated in a broader sense. *Artemisia* biodiversity in Kashmir is presented by 38 species. There was an urgent need of systematic approach for the collection and cultivation of these medicinally important plants (Shinwari & Khan, 2000). Shinwari et al., (2002) took first step to initiate the awareness about importance, conservation. They made an inventory of the ethnomedicinal uses of biodiversity (Valles et. al., 2003). In this article only the folk remedies and diseases cured by different species of *Artemisia* had been compared and discussed, so that a complete inventory of ethnomedicinal use of Genus *Artemisia* can be made. For instance, Iqbal et al., (2004) studied the ethno-veterinary uses of *A. brevifolia* (locally known as “afsanteen”) and considered it as antihelmintic herb in Kashmir. From the available material total 35 ethnomedicinal surveys were scrutinized and analysed to evaluate the ethnomedicinal impact of *Artemisia* on the social health care of indigenous communities of Kashmir (Table 1). These surveys had been carried out in different localities of Kashmir.

The results demonstrated that different scientists had evaluated the importance of different species of *Artemisia*. Total 6 species were common including *A. sieversiana*, *A. roxburghiana*, *A. amygdalina*, *A. annua*, *A. absinthium*, *A. brevifolia*, *A. vulgaris*, *A. dubia*, *A. dracunculus*, *A. maritime*, *A. japonica*, *A. Kurramensis*, *A. macrocephala*, *A. moorcroftiana*, *A. parviflora*, *A. santolinifolia* and *A. scoparia*. These plants were effectively used for the remedy of 15 different ailments (Table 1) by using different parts such as root, stem, fruit and whole plant as a whole (Fig. 1). Adding to this, *A. scoparia* had been considered the best antidote for snake and

scorpion bites. *A. Kurramensis* was declared best as vermifuge while *A. brevifolia* was excessively used for gastric problems and vermifuge.

Table 1: Ethnomedicinal uses of genus *Artemisia*

Species	Common Name	Botanical features	Disease Cure
<i>A. absinthium</i>	Grand wormwood	Tall, grooved, branched and silvery green, greenish-grey spiral leaves, pale-yellow tubular flowers	Helminths, Skin infections, Gastric problems, Fever
<i>A. annua</i>	Sweet wormwood	Hairless, upto 30-100 cm tall, Leaves divided into leaflets, Green-yellowish small flowers	Malaria, breast cancer, Fever, Gastric problems, Malaria
<i>A. amygdalina</i>	Almond wormwood	2m tall, Simple serrate leaves- green upper surface and hoary tomentose lower surface, Numerous small flowerheads	Diabetes, Anti-inflammatory activity, Burns
<i>A. maritima</i>	Sea wormwood	Leaves are twice pinnatifid, yellowish small oblong flowerheads	Malaria, Abdominal pain, Helminths, Gastric problems
<i>A. roxburghiana</i>	Roxburgh's wormwood	Short petiolated/sessile leaves, hairy upper leaves, yellowish-brown smaller flowers	Diabetes, Helminths, Malaria, Fever
<i>A. sieversiana</i>	Sieversian wormwood	0.8m tall, triangular leaves with acute leaf lobes, yellowish-brown smaller flowers	General Antimicrobial activity, Anti-infective agent

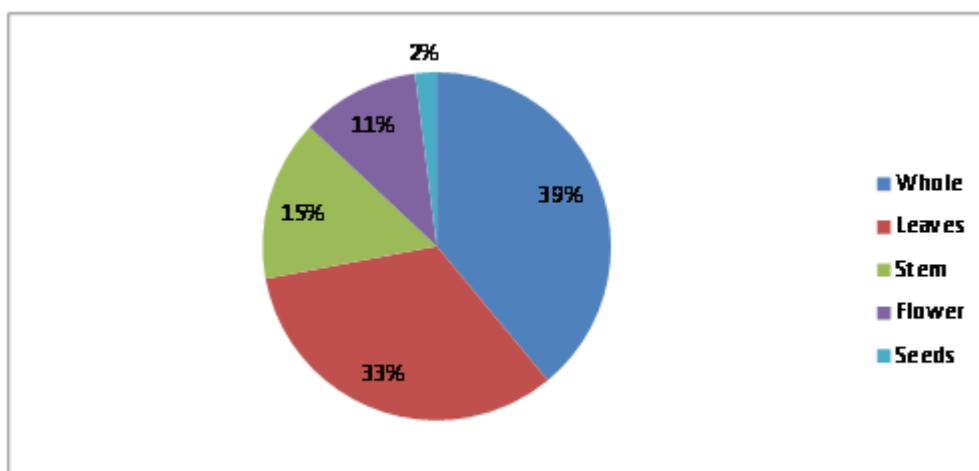


Fig. 1. Parts of *Artemisia* species used in folk remedies.



Artemisia absinthium



Artemisia annua



Artemisia amygdalina



Artemisia maritima



Artemisia roxburghiana



Artemisia sieversiana

V.CONCLUSION

The study concluded that ethnomedicinal impacts of *Artemisia* in socio-economic life of Kashmir communities revolved around 6 main species. It did not mean that rest of the species have no effective uses for folk remedy. This indicated the gap to be filled by future workers. Also for the member of smaller group, there was need to collect more information from other areas for authentication. Similarly there are so many empty slots for new scientific research to explore the hidden treasure of nature against pathogens and diseases.

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