

Medicinal Use of *Andrographis paniculata* (Kalmegh) to Cure Fever in Meerut District, Uttar Pradesh, India

Amit Tomar

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ABSTRACT

This paper highlights the medicinal use of *Andrographis paniculata* to cure fever. In Indian folk tradition, medicinal uses of *A. paniculata* have a long-standing reputation as a treatment for fever and were used to treat various disorders. It is also traditionally used to treat other kinds of diseases, common cold, cough, fever due to several infective causes. Plant species belong to the family Acanthaceae and are applied health tonic, as an antioxidant. It was applied as a decoction, infusion and tincture for the treatment in several ailments. Within India, such folk tradition is widespread throughout all parts of nation. The reference regarding the medicinal use of *A. paniculata* is given in Vedas and texts. Its vernacular name is given in Vedas as 'Kalmegh', which means dark clouds. The plant has an intense bitter taste so 'Kalmegh' is also known as King of bitter.

Keywords: *Andrographis paniculata*, Fever, Folk, Kalmegh, Medicinal use

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INTRODUCTION

The Indian system of Ayurvedic medicine is as old as our history and has formed an integral part of the Indian tradition since time immemorial. In Indian folk tradition, the medicinal use of *Andrographis paniculata* has a long-standing reputation as a treatment for fever and was used to treat liver disorders. The species was considered good as a healthy liver tonic and antioxidant. Its vernacular name is given in Vedas as 'Kalmegh', which means dark clouds. The plant has an intense bitter taste so 'Kalmegh' is also known as King of bitter.

A. paniculata is commonly found in some part of Uttar Pradesh. It is widely grown as a medicinal plant. There is no method to preparing of medicines reported by earlier researchers. Rawat and Pangtey (1987), Singh (1988), Singh and Maheshwari (1989, 1992), Puri *et al.* (1993), Sharma (1993), Tomar and Singh (2005, 2006), Tomar (2005-2008, 2007a, 2007b, 2007c, 2008a, 2008b, 2011, 2014, 2019, 2020, 2022a & 2022b), Jarukamjorn and Nemoto (2008), Prachi (2009) and Akbar (2011).

During the major part of the year, climate of Western Uttar Pradesh is influenced largely by the prevalence of dry air of the continental type, the summer being intensely hot and winter cold. Meerut district experiences a subtropical monsoon type of climate characterized by a seasonal rhythm produced by the southwest and northeast monsoons. In this area, soil is mostly loamy; in some areas it is sandy loam, silty loam and clay loam occasionally meet within the area.

MATERIALS AND METHODS

The present paper is based on the survey and collection of data from the native informants, who are Vaidhya or Hakim (Ayurvedic medicine practitioners) and rural people who have knowledge about Ayurvedic medicine with their local name. Oral interviews were held in villages and information recorded at the spot. Medicinal plants were collected and preserved for the future use.

Department of Botany, Meerut College, Meerut, Uttar Pradesh, India

***Corresponding author:** Amit Tomar, Department of Botany, Meerut College, Meerut, Uttar Pradesh, India, Email: amittomar1982@yahoo.co.in

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Study Area

During a survey on the medicinal plants, the author came across common population of *A. paniculata* (Kalmegh) in Meerut district of Uttar Pradesh, India. Meerut district of Uttar Pradesh comprises twelve blocks viz. Meerut, Rajpura, Machra, Kharkhauda, Mawana Parikshitgarh, Daurala, Hastinapur, Sardhana Saroorpur Khurd, Rohta and Jani Khurd. In shape it is roughly rectangular and is bound in the north by Muzaffarnagar, in the south by Ghaziabad, in the east by Bijnor and Hapur and in the West by Sonapat and Panipat district, respectively. Meerut district is covered by 2590 sq. km. area with 34, 44,000 population.

The district Meerut lies between 28°57' to 29°02' North latitude and 77°40' to 77°45' East longitude in the northern part of the Ganga-Yamuna Doab. The district is located about 70 km away from Delhi. The district is a vast alluvial plain with a slight slope from north to south or south-east. The district can be divided into three physical divisions- the central depression, the eastern uplands and the Ganga Khadar.

This present study provides a brief description of species, the method of preparation, and its medicinal use. This method to preparation of drug has been recorded for the first time by the author to cure fever.

Description of Species

An erect, annual herb, growing to a height of 110 cm tall, extremely bitter in taste in every part of the plant. The branches are dark green, 0.3–1.0m in height, 2–6mm in diameter, quadrangular with longitudinal furrows and winged on the angles of young parts. Leaves glabrous, ovate-lanceolate, 5-10 × 1.5-2 cm. Inflorescence a lax, axillary and terminal, unilateral raceme, forming a panicle. Bracts opposite. Flowers small, white with rose-purple spots on petals. Capsules linear-oblong, acute at both ends. Seeds numerous, yellowish brown-whitish, spotted with rose-purple. Flowering and fruiting period December–April (Fig. 1). Locality: Meerut field area in moist shady places. Tomar 304.

Vernacular names

Assamese: Kalmegh; Bengali: Kalmegh, Mahatita; Dogri: Kala Chiryat, Kala Chiryata, Kiryat, Kiryata; English: Creat, Kariyat; Gujarati: Kalukariatum, Kariyatu, Kirayto; Hindi: Kalmegh, Kiryat, Hara Chirayata, Kirayat, Charayetah, Mahattia; Kannad: Nelaberu, Nelabaevu; Konkani: Vhadlem Kiraytem, Malayalam: Nelaveppu, Kiriayattu, Nilavaepu, Olenkirayat; Manipuri: Bhubati; Marathi: Chimani, Olikiryata, Olenkirayat; Mizo: Hnakhapui; Oriya: Bhuinimba; Punjabi: Charaita; Tamil: Nilavemu, Nilavembu, Pitumbay; Telugu: Nelavemu, Nilavemu, Neelavimu, Sanskrit: Bhunimba, Yavatikta; Santali: Kalmegh.

Major chemical constituents

The plant has been subjected to extensive phytochemical studies which led to the isolation and identification of bitter principle of the plant as trihydroxy lactone 'Andrographolide' and 'Kalmeghin' (Dey 1998). It was later established as trihydroxy lactone with one tertiary hydroxyl group and finally structure as confirmed as a bicyclic terpenoid lactone, four diterpenes, andrographolide, neoandrographolide, deoxyandrographolide and andrographiside.

Method to preparation of medicine

(a) An infusion is prepared with fresh leaves (10-12) per cup of boiling water, infused for 10 minutes and kept it covered with lid during the steeping period, then strained through a strainer and drunk. It is not to be left for too long, as it can become bitter and

too strong. The standard dosage for an infusion is 250 ml 3-4 times a day for 15 days.

(b) Crushed leaves (2tsp) in one cup of normal water, is boiled gently in a saucepan with the lid on and left to simmer for about 5 minutes. The decoction is strained through strainer, cooled, and ready to drink. Decoction must be used on the day of preparation. The standard dosage for a decoction is 250 ml twice a day for 15 days.

(c) Fresh leaves (50 gms) are placed in a glass jar with tight fitting lid and 500 ml ethyl alcohol is added to it. It is kept for two weeks with occasional shaking, then strained and stored in a glass bottle with tight lid. 8-10 drops are administered thrice a day for 15 days or until cure. The tincture remains viable for two years.

(d) Fresh juice of plant is given in doses of 2-3 teaspoonfuls twice a day for 15 days.

(e) 3-4 leaves of Kalmegh with normal water are consumed twice a day for 10-15 days.

RESULTS AND DISCUSSION

The species has been identified as *A. paniculata* (Kalmegh) and it is cultivated in field areas and private gardens in rainy season. It occurs throughout the country as a herb during winter. Now it's also being cultivated. Studies revealed that *A. paniculata* is used as Ayurvedic medicine for the treatment in fever. The drug 'Kalmegh' has a very important role in folk and traditional systems of medicine. It is frequently found in sandy loam soil as an annual herb. These medicines are prepared by various methods as decoction, infusion, tincture and local people have been using these methods in the various treatments as Covid-19 infection inhibition by *A. paniculata* (Kalmegh) infusion, decoction, tincture, juice and leaves also fed orally with water and provide strength to the body and immune system. Therefore, a study revealed that *A. paniculata* is used as Ayurvedic medicines in some of Uttar Pradesh. The information were based on the detailed oral interviews held with Vaidyas, Hakims and elderly village people, who know medicinal uses of Kalmegh in the area. Therefore, study was conducted and revealed that *A. paniculata* is used as Ayurvedic medicine in the Meerut district of Uttar Pradesh. Earlier researchers did not mention the method of preparation, its medicinal use, time and dosage. We have collected information through questioners, informal interviews and discussions involving 285 people (Fig. 2) both fresh and dried leaves were used in the proportion of 25 and 57%, respectively for treating fever (Fig. 3) decoction, infusion, Juice and tincture were prepared from kalmegh in deferent proportions (Fig. 4).



Fig. 1: *A. paniculata* plant

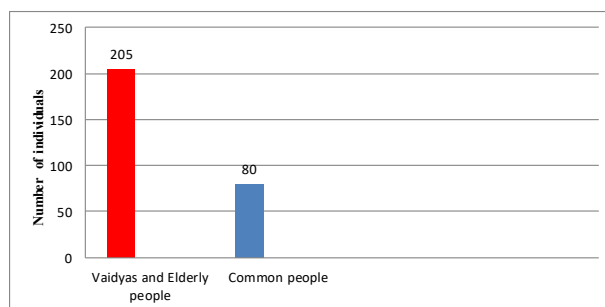


Fig. 2: Total individual information from 165 informants.

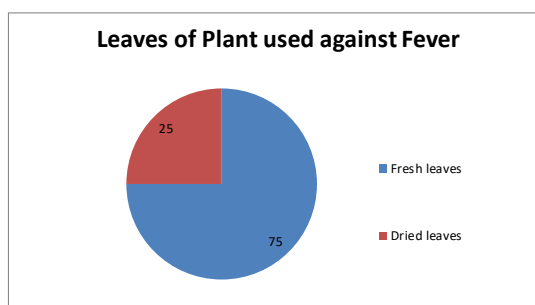


Fig. 3: Plant part used against fever in the study area.

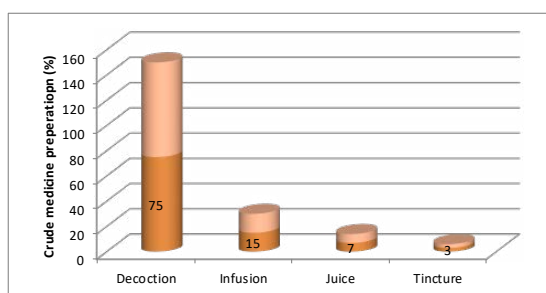


Fig. 4: Method of processing for crude medicine preparation in the study area.

Analytical study

Open questionnaires, informal interviews and group discussion received data. Author has collected 285 total individual information from 165 informants. Most of the information has received by vaidyas and elderly people followed by common people. The data indicates that many of the informants are using the infusion, decoction and tincture in the area for the against fever.

CONCLUSION

During the survey, the author collected the new information based on the detailed oral interviews. It has been realized that medicinal plants will play an important role in the future of the medical system. These medicines are prepared by various methods such as infusion, decoction, tincture and fresh juice to cure fever and provide strength to the body organs and immune system. Now the people shifting to Ayurvedic medicine system, which has no side effect and easily available at minimum rate with (Ayurvedic medical practitioners) Vaidhya or Hakim. The study revealed that *A. paniculata* is used as Ayurvedic medicines for the treatment in fever by Kalmegh infusion, decoction, tincture, fresh juice and leaves consumed in the district of Uttar Pradesh.

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Questions regarding the local uses of plant species, distribution, plant parts used, method of crude drug preparation, use for ailments, dose (duration of the treatment were also included in the questionnaire).

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