

# *Andrographis paniculata* Wall. ex Nees and its Medicinal Uses: A Review

Savita Bhardwaj<sup>1</sup> and Dhriti Kapoor<sup>1\*</sup>

<sup>1</sup>Department of Botany, School of Bioengineering and Biosciences, Lovely Professional University, Phagwara, Punjab, 144411, India

**Abstract:** Human population have close connection with the nature from the ancient times. They used the environmental products to attain food and medicine. In almost all cultures, medicinal plants are used as a source of medicines. *Andrographis paniculata* is a medicinal plant which is traditionally taken for anti-inflammatory and antibacterial purposes. Andrographolide which is the most important active constituents of *Andrographis paniculata*, exhibit diverse type of pharmacological activities such as anti-inflammation, anti-cancer, anti-obesity, anti-diabetes and other activities. This systematic review aims to highlight about active constituents and various medicinal uses of *Andrographis paniculata*.

**Keywords:** Environmental; medicine; antibacterial; pharmacological.

**Introduction:** From the commencement of human existence, man has familiarized himself with plants and used them in a variety of ways throughout the years. Medicinal plants are important part of herbal industries because of their various medicinal properties. Herbal plants have a number of medicinal and therapeutic properties. *Andrographis paniculata* Wall. ex Nees belongs to family Acanthaceae, commonly known as ‘King of Bitters’ as the plant have bitter taste. *Andrographis paniculata* is found in countries like India, Sri Lanka, Pakistan and Indonesia but it is also grown in China, Thailand, the East and West Indies and Mauritius [1]. Plant can be grown in different environmental habitats like wastelands, dry or wet lands, plains, hill slopes, farms, sea shores and even along road sides. *Andrographis paniculata* is an annual herb, all parts of which have bitter taste. From earlier times, this plant has been grown as medicinal plant in many traditional medical systems around the globe. Only a few species are medicinal of which *Andrographis paniculata* Wall. ex Nees, is most popular and important [2]. In India, *Andrographis paniculata* is a rainy season (Kharif) crop and grown on all kinds of soil [3]. It is an annual, profusely branched, erect herb which is 0.5-1.0 m in height with a tap root. Leaves are green, lanceolate, glabrous with slightly undulate margin, acuminate apex with a tapering base. Flowers are small and solitary. Corolla is whitish or light pink in color with hairs. Fruit is capsule, linear, oblong and acute at both ends; seeds are numerous.

## **Active constituents of *Andrographis paniculata* and its medicinal uses**

*Andrographis paniculata* is broadly used in various traditional medical systems such as *Ayurveda*, *Unani* and *Siddha* as a cure for different diseases in Indian traditional system as well as in tribal medicine in India. Active chemical constituents of *Andrographis paniculata* include andrographolide, 14-deoxy-11 oxoandrographolide, 14-deoxy-11,12 didehydroandrographolide, 14-deoxy andrographolide; non bitter compounds neoandrographolide, homoandrographolide, andrographosterol, stigmasterol, andrographane, andrographone, andrographosterin, andrograpanin etc. The herbs and its isolates like andrographolide, neoandrographolide,

dehydroandrographolide, isoandrographolide etc. have anti-inflammatory, hepato-protective, astringent, anodyne, anti-pyretic properties and helps in arresting dysentery, diabetes, cholera, bronchitis, influenza, swellings and itches, piles and gonorrhoea [3]. Recently, this herb has been utilized as a treatment for HIV, hepatitis, diabetes, cancer and kidney disorders [4]. Among all these chemical constituents andrographolide is the most important bioactive constituent of *Andrographis paniculata*. It is colorless, bitter in taste, crystalline and known as diterpene lactone. Therapeutically important active principle andrographolide is found in aerial parts of the plant, mainly in leaves. Andrographolide protects the liver and gallbladder [5].

**Conclusion:** We conclude that *Andrographis paniculata*, is a traditional medication for fever and various other diseases, and also have different immunological applications in cancer and viral diseases like HIV and others. The plant is beneficial in treating cardiovascular disease and in preventing liver toxicity thus improving functions of heart and liver. Because of useful benefits of this plant, it can be promoted as a harmless, very important medicinal plant for general mankind.

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