

Review of Various Activities Exhibited by *Asystasia Gangetica*

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ABSTRACT

Asystasia gangetica (L.), commonly known as Chinese violet or creeping foxglove is a fast-growing perennial herb belonging to the Acanthaceae family. It is widely distributed in tropical regions of Asia and Africa and often found as a ground cover along roadsides, farms, and open fields. The plant has opposite leaves, slender stems, and attractive pale purple to white tubular flowers. Traditionally, *Asystasia gangetica* is used in herbal medicine for treating asthma, rheumatism, swelling, and infections. Its leaves contain bioactive compounds such as flavonoids, tannins, saponins, and alkaloids, which contribute to anti-inflammatory, antioxidant, antimicrobial, and analgesic properties. In some regions, leaf extracts are applied to manage asthma symptoms and reduce respiratory constriction. The plant is also used as forage for livestock because of its high protein content. However, it can become invasive in certain environments due to rapid spreading. Overall, *Asystasia gangetica* is a versatile medicinal and ecological plant with multiple traditional uses supported by emerging scientific studies.

Keywords: *Asystasia Gangetica* (L), Acanthaceae, anti-inflammatory, antimicrobial, anti-asthmatic, antioxidant.

INTRODUCTION

The plant *Asystasia gangetica* (L.) T. Anderson is a widely recognized medicinal herb with a rich history in traditional medicine across the Old World tropics. The species, commonly known as the Chinese violet, Ganges primrose, or coromandel, belongs to the Acanthaceae family. It is a fast-growing, perennial, straggling herb characterized by quadrangular stems that can reach heights of up to 2 meters and readily root at the lower nodes. Its flowers vary in colour from white to pale purple or violet, often featuring distinct purple or yellow markings on the lower lip¹.



Fig. 1¹¹ : *Asystasia gangetica* leaves

Asystasia gangetica is a member of the Acanthaceae family. It is a perennial herbaceous, ascending and branching plant. Flowers are pale purple blue to violet or lime white in colour. Report on

phytochemical screening of the plants extract showed the presence of carbohydrates, protein, alkaloids, steroidal aglycones, saponins, flavonoids, reducing sugars and triterpenoids. The plant has been claimed to have anti-inflammatory, anti-diabetic, anti-asthmatic, analgesic and bronchospasmolytic. In India, the whole plant is used as juice for treating rheumatism and the root paste for skin allergies. In Nigeria the extract of the whole plant is given to women in labour to ease the pain during childbirth. It is also given to pregnant women with constipation in late pregnancy².

It is used to treat hypertension, rheumatism, asthma, diabetes mellitus, and as an anthelmintic in South Africa, India, Cameroun, Nigeria, and Kenya respectively. It has also been reported to inhibit the angiotensin I converting enzyme *in-vitro*. Therefore, the aim of this study is to investigate the *in-vivo* effect of aqueous leaf extract of *Asystasia gangetica* on the blood pressure and heart rate in anaesthetized male spontaneously hypertensive rats and to elucidate possible mechanism by which it acts³.

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Research Article

PHARMACOGNOSTICAL AND
PHYTOCHEMICAL SCREENING OF
ASYSTASIA GANGETICA
(CHINESE VIOLET)

KEY WORDS: Medicinal plants, bioactive constituents, *Asystasia gangetica*, *Acanthaceae*, saponins.

The plant is used traditionally as a decoction for the cure of rheumatism, stomach ache, and heart pain. In East African countries, like Kenya, the decoction of leaves is used as a vermifuge to cure intestinal worms. Leaves are prevalently employed in the management of asthma in Nigeria. In India, it is used as astringent, stomachic, and diaphoretic. It is claimed that the decoction of leaves is extremely effective in the treatment of asthma. In Cameroonian traditional medicine, it is used in the treatment of bone fracture, bone diseases, diarrhoea, and woman infertility⁴.

It has many medicinal, nutritional and local values including its use as forage. It has high production and crude protein concentration, which can reach 23.5% and can be higher in the dry season than in the rainy season. High mineral concentrations and high palatability for animals are other desirable attributes. Considerable research has been conducted on its benefit as feed for animals, e.g. broilers and ruminants⁹.

Taxonomy

Root	Root
Kingdom	Plantae
Phylum	Tracheophyta
Class	Magnoliopsida
Order	Lamiales
Family	Acanthaceae
Genus	<i>Asystasia</i>
Species	<i>Asystasia gangetica</i> (L.) T.Anderson

Fig. 2¹²: taxonomical classification

Asystasia gangetica leaves have α -amylase inhibitory activity. The plant has been claimed for anti-asthmatic,

PHARMACOLOGICAL ACTIVITY

Anti-inflammatory Activity: *A. gangetica* extract (80% ethanol) and its isolated glycoside, luteolin-7-o-neohesperidoside when subjected to hypotonicity induced haemolysis. It produced dose-dependent %inhibition and exhibited biphasic activity. Antiinflammatory activity of luteolin-7-o-neohesperidoside was assessed by carrageenan induced rat paw oedema method in albino rats and the effect was found to be significant and comparable to phenyl butazone⁵

Anti-asthmatic Activity: *A. gangetica* leaves possess significant anti-asthmatic property in Guinea pigs by relaxing histamine-pre-contracted tracheal strips. The ethyl acetate extract is found to be more potent than its hexane & methanol extract. These extracts especially methanol, also showed an anti-inflammatory response against egg albumin induced acute inflammation in Albino rats⁶

Antimicrobial: Hexane, ethyl acetate and methanol extracts of *A. gangetica* at conc. 25 to 200 mg/ml inhibited (dose dependent) the growth of pathogenic microorganisms, including bacteria (*Escherichia coli*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Salmonellae typhi*, *Bacillus subtilis* and *Klebsiellae pneumoniae*) and fungi (*Epidermophyton floccosum*, *Rhizopus stolon*, *Aspergillus niger*, *Penicillium notatum*, *Candida albicans* and *Tricophyton rubrum*) to different degrees using agar diffusion pour plate method⁷

Anti-oxidant Activity: 70% ethanolic extract of *A. gangetica* leaves (100 mg/kg) along and in combination with 90% ethanolic extract of *Morus indica* (400 mg/kg) possessed significant anti oxidant and antidiabetic action in diabetic albino rats (alloxan induced). Alcoholic extract of leaves upsurges the levels of glucose-6-phosphate dehydrogenase, catalase, superoxide dismutase, glutathione peroxidase, glutathione reductase, reduces glutathione, and declines lipid peroxidation (thiobarbituric acid reactive substances) level; thus, possessed anti-oxidant property. Free radical scavenging activity has been performed on isolated iridoid glycoside viz. 6 β hydroxyantirrhidine; angeloside; 6-O- α -L-rhamno pyranosyl-catapol; 6-O- α -(3''-O-trans-caffeoyl)-L rhamnopyranosyl-catapol; ajugol. In DPPH assay, iridoid glycoside, 6-O- α -(3''-O-trans-caffeoyl)-L rhamnopyranosyl-catapol exhibited the potent scavenging activity with SC50(half maximal scavenging activity) value. 3 mm with respect to the other iridoid glycosides. In the ORAC assay, 6 O- α -(3''-O-trans- caffeoyl) -L-rhamnopyranosyl catapol was more potent than the positive control. The *A. gangetica* alone or in combination with *Hibiscus rosasinensis*, *Emilia coccinea* and *Acanthus montanus* showed the free radical scavenging activity against 2, 2-diphenyl-1 picrylhydrazyl radical, hydrogen peroxide, hydroxyl radical, nitric oxide radical, and superoxide radicals using in vitro models. All these studies suggested the use of plant as anti-oxidant⁸.

CONCLUSION

In conclusion, *Asystasia gangetica* is a phytochemically rich medicinal plant with scientifically supported therapeutic potential. It's documented anti-inflammatory, anti-asthmatic, antidiabetic, antimicrobial, antioxidant, and ACE-inhibitory activities align closely with its traditional

uses across various cultures. The plant's diverse bioactive compounds and positive preclinical results indicate significant promise for developing novel herbal formulations or drug leads. Further controlled in-vivo studies—particularly on its cardiovascular effects, safety profile, mechanism of action, and standardization of extracts—are essential to establish its clinical relevance and support its integration into evidence-based herbal medicine.

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