



DETAILED STUDY OF *ANOGEISSUS* *LATIFOLIA*

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ABSTRACT

The present study was undertaken to review the morphologic characters, distribution, chemistry, the pharmacological activity of the plant *Anogeissus latifolia*. The *Anogeissus latifolia* plant consists of beta-sitosterol, tannins, glycosides, ellagic acid, terpenoids, flavonoids, steroids, in the different parts of the plant which is useful for producing various pharmacological activity such as wound healing, antiulcer activity, antioxidant activity, antidiabetic activity, hypolipidemic activity, analgesic, anti-inflammatory, antipyretic activity, anthelmintic activity, anticonvulsant, thrombolytic activity, cytotoxicity activity.

Keywords: *Anogeissus latifolia*, Antioxidant activity, Hepatoprotective, Pharmacological activity.

INTRODUCTION

Anogeissus latifolia Wall. (Combretaceae), is a huge or mild sized tree feature of dry deciduous forests and not unusual during India. The distinctive, a part of the plant contains tanins, ellagic acid, steroids, betasitosterol, glycoside and flavonoids.¹ This flora are used as an ethnomedicine in Asia and Africa to deal with numerous illnesses like diabetes, fever, diarrhoea, dysentery, tuberculosis, wound recovery, pores and snake and scorpion venom.² *Anogeissus latifolia* is one of the essential medicinal plants used in Ayurveda for heart diseases. This plant is effective for urinary tract infections, skin diseases (eczema, psoriasis), liver diseases, fever, and epileptic seizures. Pharmacologically active phenolic plant component is ellagic acid. It has healing and bactericidal properties, anti-ulcer potential, lipid-lowering activity and hepatoprotective capacity. Provide assessment summary Ethnobotanical, phytochemical, pharmacological and biotechnological research on this medicinal plant.³ The significant interest in drugs derived from *Anogeissus latifolia* plants is due to the belief that plants are secure and reliable, and with lesser side consequences. The interest on natural drugs and their usage had been growing unexpectedly in latest years.⁴

MORPHOLOGICAL CHARACTERS

DISTRIBUTION

Anogeissus latifolia bark was collected from Chitrakoot, Madhya Pradesh, India, in October 2002. Plant samples Dr. AKS Rawat and the certificate (19725) were deposited in the Department of Herbarium (National Institute of Botany, Lucknow). The bark (1 kg) of golden leaf daylily is air dried at room temperature and ground into a coarse powder. To extract oil, the powder (250 g) is impregnated with petroleum ether. It is distributed throughout India and Ceylon. The plant is mostly found in dry deciduous forests except East Bengal and Assam. It is found in the southern region of the Himalayas, from Ravi to Nepal, Bihar, Chota Nagpur and southern India.⁶ The fresh leaves of *Anogeissus latifolia* have been gathered from Nilgiris of Tamil Nadu. The *Anogeissus latifolia* leaves have been washed very well with distilled water and shade dried for five days at room temperature. The dried leaves were finely ground using an electric powered grinder and stored in air-tight boxes for similar use. Soxhlet extraction technique was used to extract the *Anogeissus latifolia* leaves and the extraction technique was carried out using solvent viz., hexane. The extraction method was performed for six hours at steady temperature of 60°C. Repeated extraction became accomplished with the identical solvent until a clear colorless solvent was acquired.

obtained extract become evaporated to dryness and stored at 4°C in an hermetic container for further use.⁷

Uses

- Wound healing aiming for perfect skin regeneration. Analgesic ☐
- Bark- UTI infection, skin diseases, anti-epileptic, liver disease, fever
- Gum- Emulsifier, stabilisers, ceramic, food & pharmaceutical
- Leaves- wound healing, analgesics, Antipyretic, hair growth
- Anti-ulcer activity
- Anti-microbial activity Anti-cancer activity ☐

Pharmacological activity of *Anogeissus latifolia*

- *Anogeissus latifolia* is an effective treatment for dermal wounds in rats: In excisional and incision wound models, rats were utilized to heal bark from *Anogeissus latifolia* as an ethnolic extract for dermal wounds. Additionally, the study examined the potential of this bark for wound healing. *A. latifolia*'s impact on wound healing was assessed through the evaluation of various parameters related to incisional wound parameters, including epithelialization time, scar area, tensile strength, and hydroxyproline measurements. The surface area of wounds is reduced and the strength of the material is increased by *A. latifolia*, which speeds up wound healing.⁸
- **Antiulcer activity:** *Anogeissus latifolia* (Roxb. ex DC.) Wall Bark. Old Gill. & Pell. (Combretaceae) has been reported to be used in the treatment of various ailments, including stomach disorders and skin diseases. Broad-leaf lentil has gastroprotective activity and has a significant inhibitory effect on ulcer formation caused by the body and medications, and the healing rate of ulcers due to the presence of ellagic acid and gallic acid.⁹
- **Antioxidant activity:** *Anogeissus latifolia* is used for total antioxidant capacity, hydrogen donating ability, nitric oxide, superoxide scavenging activity, hydrogen peroxide decomposition activity along with lipid peroxidation. Integral antioxidant capacity was determined by chemiluminescence test. The Thiobarbituric acid reactive species (TBARS) method using rat liver homogenate is used for the detection of lipid peroxidation in *Anogeissus latifolia* extract. *Anogeissus latifolia* extract has high antioxidant activity due to 0.95% percentage of gallic acid, which could be one of the reasons for the strong antioxidant activity exhibited by the plant.¹⁰

- Antidiabetic potential of methanolic bark extract in D-variant Encephalomyocarditis Virus-caused Diabetes: *Anogeissus latifolia* Wall (Combretaceae) is a bulky or fair-sized tree present all over India. The plant is traditionally applied for various ailments which includes dysentery, hepatopathy, snakebite, leprosy, wounds, ulcers, pores and skin sicknesses and diabetic conditions. The D variant of EMC virus was applied to infect

the mice for induction of pancreatic beta cell damage leading to diabetes. Diabetes was established through estimating the serum glucose degrees. The confirmed diabetic animals had been further assembled in organizations and applied for the examine of numerous different biochemical markers were additionally evaluated which include insulin, liver glycogen, leptin, testosterone and glucagon degrees. Liver capabilities and lipid profile had been additionally measured. The consequences proven capability antidiabetic efficacy of the methanol extract at each the dose degree of two hundred and 400 mg/kg. In end, the methanol extract of barks of *Anogeissus Latifolia* became mounted to be significant antidiabetic.¹¹

- Antibacterial activity: The solvent extracts of the plant *Anogeissus latifolia* (Roxb. ex DC.) Wall, ex Guill. & Perr. was investigated against various pathogenic bacteria such as *Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Proteus sp.* for its antibacterial activity. Hexane and chloroform extracts demonstrated a high degree of activity than methanol extract of *Anogeissus latifolia*.¹²
- Hypolipidemic activity: Atherogenic animals handled with gum ghatti of *Anogeissus latifolia* have considerably progressed the lipid profile and this effect is probably an additive in movement with other cholesterol lowering regimes.¹³
- Infections: The roots of *Anogeissus latifolia* which is beneficial in UTI infections, pores and skin sicknesses, liver complaints, fever, epileptic fits and so forth. For heavy metal contents and proximate evaluation of the root sample was additionally carried out.¹⁴
- Analgesic, anti-inflammatory and antipyretic activities of ethanolic extract of stem bark: Stem bark of *Anogeissus latifolia* Roxb (family: Combretaceae) is used traditionally and ethnomedicinally to alleviate pain, inflammation and fever conditions. The antipyretic activity was assessed by using Brewers yeast-induced pyrexia model in rats. The ALEE exhibited analgesic, anti-inflammatory and antipyretic effects. The presence of phenolic and flavonoid compounds which may be responsible for the effects. The study validates the use of stem bark of *Anogeissus latifolia* for treatment of painful inflammatory conditions.¹⁵
- Anthelmintic activity: The various extracts of *Anogeissus latifolia* possess effective anthelmintic activity because of the presence of Flavanoids, Tannins, Triterpenoids, Phenolic compounds and cardiac glycosides present within the extracts and the leaves of *A. latifolia* contained merely hydrolysable tannins and associated compounds, while the bark and timber extractives predominantly incorporates each flavanoid tannins and compounds associated with hydrolysable and flavanoid tannins. The wormicidal activity of diverse extracts against earthworms shows that it can be powerful against parasitic infections of people.¹⁶
- Anti-Pyretic Effects of Aqueous Extract of *Anogeissus Latifolia* Roxbin Albino Wistar Rats: The antipyretic outcomes of *Anogeissus latifolia* aqueous leaf extract on Wistar rats have been studied. In total, 30 Wistar rats (each sex) ranging in weight from a hundred and fifty to 200 grams have been employed. Through the artificial baker's yeast, the fever is induced in the Wistar rats. There were five groups of rats. Six rats in each study group. The third, fourth, groups were given 200 and 400mg/kg b.w. After the induction of the aqueous extract and the control medication the first two groups were used as comparable negative and normal controls. Blood samples were taken from slaughtered rats for blood tests, urine test, and other biochemical tests. The *Anogeissus latifolia* aqueous extract contains Quinine, Tannins, Phenolic Compounds, and alkaloids. Significant results were found. Group 2 showed a statistically great elevated rectal temperature and groups 2 and 3, even as group 5 confirmed a non-significant lower in those metrics, respectively. C-reactive protein and nitric oxide ranges both rise appreciably. Studies determined concentrations in groups 3 and 4 in comparison to group 2. All haematological indicators throughout all treatment groups confirmed no statistically significant variations found, in contrast to the 2nd group. *Anogeissus latifolia*, leaf aqueous extract showed pyretic effects after two hours of treatment at 400mg/kg¹⁷

- **Anticonvulsant activity:** *Anogeissus latifolia* consists of a better concentration of ellagic acid and other tannin derivatives (gallotannins). Therefore, it is feasible that the found anticonvulsant of *Anogeissus latifolia* may be because of the presence of an ellagic acid or other tannin derivatives. Anticonvulsant effect of each MES and PTZ convulsions has confirmed in the ethanolic extract of *Anogeissus latifolia* bark.¹⁸
- **Thrombolytic effect:** The In vitro clot lysis technique become used for assessment of the thrombolytic activity of the plant extract. Increase in the thrombolytic activity with increase within the concentration of the extract has been stated. The activity can be considered as enormous in comparison to the activity of the effective control Streptokinase. The plant extract may also show as an powerful herbal medicine for the thrombolytic problems.¹⁹
- **Cytotoxicity:** The cytotoxicity of 95% ethanolic extract of stem bark and leaves have been determined in 9 human most cancers cell strains which includes cancers of lung, prostate and so forth. It was also determined that *A. latifolia* became strongly lively towards diverse cellular lines with IC₅₀ values ranging from 10.6-28.7g/ml, respectively.²⁰
- **Diuretic activity:** By using an in-vivo Lipschitz test method, the diuretic capacity of a leaf (methanol and aqueous extracts) was tested in albino rats. For the study, the parametus taken were: (a) urine volumes; and (b) urinary sodium and potassium ion concentrations. within the case of the study the Furosemide was used as the standard. when as compared to control methanol and aqueous extract at 500 mg/kg indicated that body weight had effectively elevated the urine quantity of electrolyte excretion and the both extracts confirmed full-size diuretic activity.²¹
- **Hepatoprotective activity:** The carbon tetrachloride is treated with the primary monolayer liver cells and extract of *Anogeissus latifolia* in the rats. Hepatoprotective pastime was demonstrated within the CCl₄ damaged primary monolayer culture. Biochemical parameters which include serum transaminases [aspartate aminotransferase (AST) and alanine aminotransferase (ALT)] and alkaline phosphatase (ALP) in serum had been analyzed. Hydroalcoholic extract of *Anogeissus latifolia* (300 mg/kg) became observed to have protective activity in rats with CCl₄-caused liver harm as judged from serum marker enzyme pastime.²²
- **Nephroprotective activity:** HPTLC, HPLC and LC-MS evaluation of ALEE (*Anogeissus latifolia* ethanolic extract) revealed the presence of ellagic acid and other numerous phytoconstituents. The administration of gentamicin caused tremendous increase in urine output, kidney weight, improved biochemical inflammatory and oxidative stress parameters in addition to caused histological damage inside the kidney tissue. Those parameters have been attenuated via the concurrent treatment with ALEE and ellagic acid. The effects had been comparable to cystone. *Anogeissus latifolia* has exhibited the nephroprotective capacity and validated the use of stem bark the in kidney issues.²³
- **Nitric oxide scavenging activity:** Nitric oxide (NO) scavenging activity was determined by means of spectrophotometric method of Gerrat. For this, test solution was prepared by means of dissolving 2 ml of 5 mM sodium nitroprusside solution in 0.5 ml phosphate buffer saline (pH 7.4) and then combined with different concentration (100 to 600 µg/ml) of extract dissolved in methanol. The resulting mixture become incubated at 25°C for 120 minutes. Took 0.5ml of the incubated solution and 2 ml of Griess reagent (1%Sulfanilamide, 2% phosphoric acid and 0.1% naphthyl ethylenediamine dihydrochloride) became used to dilute it. The absorbance was measured at 546 nm through pouring the test solution into cuvette. The chromophore absorbance formed throughout diazotization of the nitrite with sulfanilamide and is coupled with naphthylethylene diamine. The percent scavenging activity was calculated the usage of the formula:

$$\% \text{ scavenging activity} = [(Ac-At)/Ac] \times 100$$
where, Ac is the absorbance of the control response and at is the absorbance inside the presence of samples with the extracts.²⁴

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