

Isolation of Phytoconstituents from the leaves of Anogiessus latifolia Linn

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Abstract

PHARMA Chloroform acetone fraction of the methanol extract and crude ethanol extract of the leaves of Anogiessus latifolia Linn (Combretaceae) led to the isolation of 4,18-di methyl, 22-methyl, 15-hydroxy, 11,12-naptha phenanthrene (1) and gallic acid (2). Their structures were elucidated by spectroscopic methods such as UV, IR, NMR, LCMS and Co-TLC pattern. Compound 1 was isolated for the first time from this plant.

Key words: Anogiessus latifolia, 4,18-di methyl, 22-methyl, 15-hydroxy, 11,12-naptha phenanthrene, gallic acid, spectroscopic method. ZLISD

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Introduction:

The genus Anogeissus (Family. Combretaceae) includes four or five different species of tropical trees. Out of these A. latifolia is widely distributed in farther India. Anogeissus latifolia (Local name-Dhai, Family- Combretaceae) is a small to medium-sized tree up to 36 meters tall, which grows all over Chittagong division in Bangladesh. The bark has been reported to be useful in the treatment of skin diseases, snake and scorpion bite, stomach diseases, colic, cough and diarrhoea. The wound healing and free radical scavenging activities of the plant have also been documented. Updated phytochemical investigations with A. latifolia leaves were reported for the presence of (+) leucocyanidin, ellagic acid and glycosides of ellagic and flavellagic acids¹, quercetin, myricetin, and trimethyl ellagic acid², quercetin, myricetin and trimethyl ellagic acid³. It is reported to posses antimicrobial⁴. antioxidant anti ulcer. hepatoprotective⁶, wound healing⁷, anti-fungal⁸, CNS depressant⁹, anti-aging¹⁰ and insecticidal¹¹ activities.

Table 1- Percentage Yield of extracts at Smallscale and large scale.

Material and Methods

Plant material

Anogiessus latifolia Linn leaves were collected and authenticated by Central Council for Research in Ayurveda and Siddha, Bangalore. A voucher specimen has been preserved in the Department of Pharmacognosy, The Oxford College of Pharmacy, Bangalore.

General instrument details

UV: Shimadzu UV VIS-1700; IR: JASCO FTIR 5300; LCMS: Agilent 1100 LC-MSD APCI; 1H-NMR (500 MHz).

Extraction and isolation procedure

Coarsely powdered leaves (750 gm) were extracted with petroleum ether followed by benzene, chloroform, acetone, methanol and aqueous by the process of continuous extraction (soxhlation). The crude extracts were evaporated to dryness in a rotary film evaporator. Methanol extract was subjected to column chromatography over silica gel (60-120 mesh) using petroleum ether, taking 100 ml fraction each time. Compound I was isolated from Chloroform : Acetone (7:3) fraction respectively while Compound 2 was isolated from the precipitate obtained from the alcohol extract which was further purified by fractional crystallization

Extracts		% Yield (w/w)			
	Color of the extract	Small Scale	Large Scale		
Pet Ether	brownish-green	2.24 %	2.42 %		
Benzene	brownish-green	0.9 %	1.4 %		
Chloroform	Dark green	0.30 %	0.47%		
Acetone	Dark yellow	12.4 %	14.10%		
Methanol	Reddish Brown	14.5 %	15.02 %		
Aqueous	Dark brown	11.0 %	12.24 %		

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Chemical	Test	Petroleu	Ben	Chloroform	Acetone	Methanol	Aqeous
constituent		m Ether	zene				
Alkaloids	1.Mayer's test	-	-	-	-	-	-
	2.Dragendroff	-	-	-	-	-	-
	3.Wagner's test	-	-	-	-	-	-
	4.Hager's test	-	-	-	-	-	-
Carbohydrat	1.Molisch's test	-	-	+	+	+	+
es	2. Benedict's	-	-	+	+	+	+
	3. Fehling test	-	-	+	+	+	+
Anthracene	1.Borntrager's test	-	-	-	-	-	-
Cardenolide	2.Legal test	-	-	-	-	-	-
S	3. Baljet test	_	-	_	_	_	_
Saponins	1.Foam test	-	-	_	-	_	-
Phytosterol	1.Salkowaski test	+	+	UNDA.	-	-	-
	2. Libermann	+	- 1 6.	PHANN	A-	-	-
	Burchard test		O	1000 St. 600	CL		
	3. Libermann test		-		- de	-	_
Fats & oil	Stain test	- 7			1	1	_
Resins	1.Acetone water test	IRV-	11-	0-1		IF	_
Phenols	1. Ferric chloride test	-0		5-1	+	+	+
	2.Lead acetate Test	- 1	-		+ 5	+	+
Flavanoids	1.Gelatin test	-	also b		204	-	-
	2.Shinoda test	_	-	_	+	+	+
	3.Acid Base test	_	_	-	+	+	+
Proteins	1. Ninhydrin test	_	_	_	_	_	_

Table 2- Phytochemical screening

RESULTS and DISCUSSION

Total two compounds were isolated. Their structures were elucidated by spectroscopic methods such as UV, IR, NMR and LCMS.

In the IR spectra the presence of a broad spectrum at 3431 cm-1 shows the presence of –OH group and the peaks at 2935, 2867 and 1640 cm-1 appeals the presence of aromatic rings which can be further confirmed by the presence of the sharp peak at 7.15 in NMR spectra. In mass spectra the fragmentation peak at 173 and 185 shows the fragmentation of phenanthrene and naphthalene rings respectively.

Compound 2 was identified on the basis of the Co-TLC method in which the Rf value of the sample compound matched with the Rf value of the standard gallic acid.

hydroxy, 11,12-naptha phenanthrene and gallic acid.

After characterization the isolated compound I and II was found to be 4,18-di methyl, 22-methyl, 15-



Fig. 1 CO- TLC for Compound II



Fig. 2 IR spectra of Compound I



Fig.4 NMR Spectra of Compound I



Fig.6 UV spectra of Compound I

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Fig. 7 UV spectra of Compound II

REFRENCES

- Chopra NR, Chopra IC, Handa KL, Kapoor LD. Anonymous, Pharmacogonosy of Indigenous drugs. Vol 1, Published by central council for research in Ayurveda and Siddha, New Delhi; 1985.
- Khare CP. Encyclopedia of Indian Medicinal plants. Rational western therapy, Ayurvedic and other traditional usage, Botany. Springer-Verlag Berlin Heidal berg. NewYork 2004.
- 3. Reddy KK, Rajadurai S, Sastry KNS. Studies on Dhava tannins. Indian J. Chem 1965;(3):308-310.
- Govindrajan R, Vijayakumar M, Singh M, Rao CV, Shitwaikar A, Rawat AKS, et al. Antiulcer and antimicrobial activity of *Anogeissus latifolia*. Ethnopharmacol 2006; 106(1):57-61.
- Govindrajan R, Vijayakumar M, Singh M, Rao CV, Shitwaikar A, Rawat AKS, et al. Antioxidant potential of *Anogeissus latifolia*. Biol Pharm Bull 2004; 27(8):1266-9.

- 6. Bhakuni DS, Gupta B, Dhar ML, Srimal RC. Screening of Indian plants for biological activity. Indian Journal Expt. Biol 1971;(9):91.
- Govindrajan R, Vijayakumar M, Singh M, Rao CV, Shitwaikar A, Mehrotra S, et al. Healing potential of *Anogeissus latifolia* for dermal wounds in rats. Acta Pharm. 2004; 54(4):331-8.
- Bata WK, Kokou K, Koumaglo K, Gbeasso M, Foucoult B, Bouchet P, et al. Antifungal activities of five combretaceae used in Togolese traditional medicine. Fitoterapia 2005; 76(2):264-268.
- Sharma PC,Yelne MB,Dennis TJ,Joshi A,Prabhune YS,Broker GB et al. Database on Medicinal Plants used in Ayurveda,Vol 1. Central Council for Research in Ayurveda and Siddha. New Delhi; 2002.
- 10. Gyanendra P.Anti-aging Herbal Drugs of Ayurveda. Srisataguru publications; 2002.
- Gupta AK, Tandon N, Sharma M. Reviews on Indian Medicinal Plants, Vol 2. Indian council of Medical Research, New Delhi; 2004.