

## **Phytochemical analysis of bark of *Acacia nilotica***

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### **ABSTRACT**

Bark is the outermost layer of stems and roots of woody plants. A plant with bark includes trees, woody vines and shrubs. *Acacia nilotica* is widely spread in subtropical and tropical Africa from Egypt to Mauritania southwards to South Africa, and in Asia eastwards to Pakistan and India. It has been introduced in China, the Northern Territory and Queensland in Australia (where it is considered to be a pest plant of national importance), in the Caribbean, Indian Ocean islands, Mauritius, United States, Central America, South America and the Galapagos Islands). It has naturalized in several countries where it has been introduced as a medicinal, forage and fuel wood plant. Present study deals with the preliminary phytochemical analysis of the Water, n- Hexane and Ethyl Acetate extract of bark of *Acacia nilotica*. In which we isolates 27 secondary metabolites which are useful for development and growth of plant.

**Keywords:** *Acacia nilotica*, Bark Extracts and Phytochemical Analysis.

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### **INTRODUCTION**

Historically, Plants have provided a source of inspiration for novel drug compounds, as plant derived medicines have made large contribution to human health and well being [1]. Medicinal plants have been identified and used throughout human history. Plants have the ability to synthesize a wide variety of chemical compounds that are used to perform important biological functions and to defend against attack from predators such as insects, fungi and herbivorous mammals. At least 12, 000 such compounds have been isolated so far; a number estimated to be less than 10 % of the total [2][3].

*Acacia nilotica* [family-Mimosaceae] is a medium size thorny tree found in the drier parts of India. It has yellow mimosa like flowers and long grey pods constricted between seeds. The bark and branches are dark with fissures. The branches bear spikes about 2 cm long. The powdered bark of the plant with little salt is used for treating acute diarrhea [4]. The bark is also used extensively for colds, bronchitis, diarrhea, bleeding piles and leucoderma [5] and also possesses antibacterial activity [6]. It is also used for treatment of various diseases [7].

The present study was undertaken to identify the phytochemicals present in the bark of *Acacia nilotica* using n-hexane, Ethyl Acetate and Water extract.

## MATERIALS AND METHODS

**Collection and Authentication:** The bark of *Acacia nilotica* was collected from samangad area of Gadhinglaj region of Maharashtra, India. The bark was washed with purified water and completely shade dried. Authentication was done at Department of Botany, Dr. Ghali College, Gadhinglaj.

**Preparation of Extracts:** 150 gm of dried bark of each of *Acacia nilotica* was mixed with 500 ml of n- hexane and ethyl acetate separately. After filtration, the filtrate was dried and used for phytochemical test. For water extract 150 gm of bark were mixed with 1500 ml of distilled water and heat on water bath for 1/3 rd of original concentration . Then it was used for further analysis.

**Phytochemical Screening:** All extract of medicinal plants were analyzed for the qualitative phytochemicals analysis as shown in table 1 using standard methods [8-14].

Table 1: Phytochemical analysis of Water, Ethyl acetate and n-Hexane Extract of Bark of *Acacia nilotica*

Sr. No.	Particulars	A.W.E.	A.E.A.	A.H.E.
1.	Carbohydrate			
	Molisch's Test	+	-	-
	Barfoed's Test	-	-	-
	Iodine Test	-	-	-
	Benedicts Test	-	-	-
2.	Proteins			
	Xanthoproteic	-	-	-
3.	Amino Acids			
	Ninhydrin Test	-	-	-
4.	Flavonoids			
	NaOH Test	-	+	-
5.	Alkaloids			
	Wagner's Test	+	-	+
6.	Saponin			
	Foam Test	+	-	-
7.	Lignin's			
	Furfuraldehyde Test	+	+	-
8.	Vitamin C.			
	DNPH Test	-	+	-
9.	Tannin			
	FeCl <sub>3</sub> Test	-	-	-
10.	Fatty Acids	+	-	-
11.	Resin			
	HCl Test	-	-	+
12.	Phenol			
	Fallagic Acid Test	+	-	+
13.	Cardenolites	-	+	+
14.	Triterpenoids			
	Tschugajeu	-	-	-
15.	Flavones	-	-	-
16.	Quinones	-	+	-
17.	Flavanones	-	+	-
18.	Anthocyanin			
	10% NaOH Test	-	+	-
19.	Anthraquinones	-	-	-
20.	Steroids			
	Chloroform Test	+	-	-
21.	Betacyanin	-	-	-
22.	Coumarins	-	-	-
23.	Acid	-	-	-
24.	Phlobatannin	-	-	-
25.	Leucoanthocyanin	+	-	-
26.	Chalcones	+	-	-
27.	Cardiac Glycosides	+	-	+

+ = Present; - = Absent; A.W.E.- *Acacia nilotica* Water Extract, A.E.E.- *Acacia nilotica* Ethyl acetate Extract, A.H.E.- *Acacia nilotica* n-Hexane Extract.

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**RESULTS AND DISCUSSION**

For various extracts chemical test were performed and the results were presented in Table 1. In the chemical test results aqueous extracts contains high number of phytochemicals qualitatively whereas ethyl acetate extract contains very low number of secondary metabolites.

Deshpande S.N reported Alkaloids, Carbohydrate, Saponin, Proteins, Amino Acids, Anthraquinone, Tannin, Flavonoids, Fixed oils and fats and Cardiac Glycosides from the stem bark of *Acacia nilotica* [15].

Banso A. Also calculated Steroids, Terpenoids, Tannin, Flavonoid, Alkaloids, Saponin & Glycosides from stem bark of *Acacia nilotica* [16].

Anita S. reported Alkaloids, Flavonoids, Sterols, Glycosides, Saponin, Protein & Carbohydrate from *Acacia nilotica* [17].

**REFERENCES**

- [1] H.Benmehdi, O.Hasnaoui, O. Benali & F. Salhi. *J. Meter. Environ. Sci* **2012**, 3(2): 320-337.
- [2] Tapsell LC, Hemphil I, Cobiac L. *Med. J. Aust.* **2006**, 185 (4): S4-24, PMID 17022438.
- [3] Lai PK, Roy J. *Curr. Med. Chem*, **2004**, 11 (11): 1451-1460 PMID 151805777.
- [4] Gill L.S., .Ethnomedicinal uses of plants in Nigeria, University of Benin press, Benin city, Nigeria, **2009**, pp 10-30.
- [5] Del WE. *Afr.j. Biotechnol.* **2009**, 8 (7): 1270-1272.
- [6] Deshpande S.N., Kadam D.G. *International Journal of Pharmacy and Pharmaceutical Sciences.* **2013**, 5 (1): 236-238.
- [7] Singh BN, Singh BR, Singh BK, Singh HB. *Chem-Biol. Interact*; **2009**, 181 :20-28.
- [8] Rajaram S. Sawant and Ashvin G. Godghate. *Asian Journal of Plant Science and research* , **2013**, 3 (1) :21-25.
- [9] Seema Firadouse, Parwez Alam. *International Journal of Phytomedicines*, **2011**, 3: 32-35.
- [10] S.De, Y.N.Dey, A.K. Ghosh. *International Journal of Pharmaceutical and Biomedical Research* **2010**, 1 (5): 150-157.
- [11] Sunil H. Ganatra, Sweta P. Durge, Patil S.U. *Journal of chemical and Pharmaceutical Research* , **2012**, 4 (5): 2380-2384.
- [12] Ashokan Damodaran and Sandhya Manohar. *Herbal Tech Industry*, **Jan 2012**, 11-13.
- [13] Harborne JB. *Phytochemical Methods: A guide to modern techniques of plant analysis*. Chapman and Hall. New York, **1973**, pp. 279. 3<sup>rd</sup> Edn.
- [14] Sofowora A. *Medicinal Plants and Traditional Medicinal in Africa*. 2<sup>nd</sup> Ed. Sunshine House, Ibadan, Nigeria: Spectrum Book Ltd; **1993**, pp. 134-156.
- [15] Deshpande S.N., Kadam D.G. *International Journal of Pharmacy and Pharmaceutical Sciences.* **2013**, 5 (1): 236-238.
- [16] Banso A. *Journal of Medicinal Plants and Research.* **2009**, 3 (2):082-085
- [17] Anita Shakya, Shakya VK, Neetu Arya, Saxena R C. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, **2012**, 3 (2): 84-88.