

## **Comparative screening of acetonic extract of fruits of *Terminalia catappa* Linn. and *Anacardium occidentale* Linn.**

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### **ABSTRACT**

*Terminalia catappa* L. red leaves are used to expel worms, applied to rheumatism, whereas ordinary leaves are mixed with oil and rubbed onto the breast to relieve mammary pain, applied to the throat for tonsillitis. The cashew "apple," the enlarged fully ripe, fruit may be eaten raw, or preserved as jam or sweetmeat. Decoction of the astringent bark given for severe diarrhea and thrush. Old leaves are applied to skin afflictions and burns (tannin applied to burns is hepatocarcinogenic). The bark of *Anacardium occidentale* Linn is used in decoction for diarrhoea, diabetes, swelling and mouth ulcers. Infusion of the leaves and the bark relieves toothache, sore gums and dysentery. The juice from the pericarp promotes flow of urine and the alcoholic solution of the pericarp expels worms. The juice of the ripe fruit is good for dysentery. The gums extracted from the bark are an effective insecticide. Present study deals with the preliminary phytochemical analysis of Acetonic extract of fruits of *Anacardium occidentale* (Cashew nut) & *Terminalia catappa* (Almonds). In which we isolates 12 secondary metabolites which are useful for development and growth of plant.

**Keywords:** *Anacardium occidentale* L., *Terminalia catappa* L., Extracts and Phytochemistry

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### **INTRODUCTION**

Man and animals depends on the plants for their very existence .Our environment is characterized by richly diversified plant life. Plant diversity is composed of more than 5,00,000 botanical species .Plants constitute a vital component of the biodiversity as they play a key role in maintaining earth's environmental equilibrium and ecosystem stability. Herbal medicine is known to be the oldest form of healing. It originated from ancient Greek as far back as 1600BC [1]. It involves the use of plant materials such as flowers, bark, leaves, seeds or root to improve, maintain or restore health and wholeness [2].

*Anacardium occidentale* is a member of the Anacardiaceae family. It is a small tree, leaves coriaceous, ovate or elliptic. Flower polygamous in terminal panicles .Petal's 5,linear lanceolate,deflexed from the middle. Stamens 9, one larger than others. Fruits reniform,pedicel large,Fleshy,dark yellow or orange coloured. Native of Tropical America, cultivated for its edible nuts as well as its fleshy thalamus.A strogly flavoured liquor called 'Kaju Pheny' is obtained from fleshy thalamus.It is found in Amba, Chandgad, Gadhinglaj, Halkarni,Nesari, Murgud, Sangawade and Tillari [3].

The methanol and aqueous leaf extract and methanolic extract of stem bark of *Anacardium occidentale* shows antimicrobial activity [4]. The Ethanolic extract of *A. occidentale* L. nuts extract showed antifungal activity [5]. The shells of *Anacardium occidentale* Linn shows antifeedant and antihelminthic activities [6].

*Terminalia catappa* is a member of the Combretaceae family *Terminalia catappa* is deciduous trees, leaves chartaceous, crowded at the end of branches. Flowers sessile in axillary spikes. Disk hairy, fruits usually reddish green, Ovoid or Ellipsoid, glabrous. Native of Tropical Asia, planted in gardens. It is commonly called as 'Deshi Badam' [3].

Bark of *Terminalia catappa* is used for gastric ailments, bilious diarrhea and dysentery, gonorrhoea and stomach cramps and seeds are used for sexual dysfunction. Also *Terminalia catappa* is Antioxidant [7], anti-inflammatory [8] and antibacterial [9].

## MATERIALS AND METHODS

### Plant Material:

The fruits of *Terminalia catappa* Linn. And *Anacardium occidentale* Linn. Were Purchased from Gadhinglaj Market, Gadhinglaj Tahsil of Kolhapur district, Maharashtra during Feb 2013. It was authenticated by Prof. R.S. Sawant Department of Botany, Dr. Ghali College, Gadhinglaj, Kolhapur district, Maharashtra.

### Preparation of extract:

The collected fruits of *T. catappa* Linn and *A. occidentale* Linn dried under shade. The coarse powder of the fruit (500 gm) was soaked in 500 ml of Acetone and extracted in cold for 3 day's occasional shaking. The solvent from the total extract was filtered and then dried under shade; Powder was used for the phytochemical test.

### Chemicals and Drugs:

All the chemicals and solvents were of Analytical grade from SD Fine Chemicals Pvt. Limited, Bombay.

### Phytochemical analysis:

The individual extract was subjected to the qualitative phytochemical screening for the presence of some chemical constituents. Phytochemical test were carried out adopting standard procedure [10][11][12]. Test were performed for Steroids, Tannin, Saponin, Anthocyanin, Coumarins, Emodins, Alkaloids, Phytosterol, Phlobatannins Cardiac glycosides, Chalcones and fixed oils & fats.

### Steroid:

1ml extract was dissolved in 10 ml of chloroform & equal volume of concentrated  $H_2SO_4$  acid was added from the side of test tube. The upper layer turns red and  $H_2SO_4$  layer showed yellow with green fluorescence. This indicates the presence of steroid.

### Tannin:

2ml extract was added to 1% lead acetate a yellowish precipitate indicates the presence of tannins.

### Saponin:

5 ml extract was mixed with 20 ml of distilled water then agitated in graduated cylinder for 15 min formation of foam indicates Saponin.

### Anthocyanin:

2 ml of aqueous extract is added to 2 ml of 2N HCl &  $NH_3$ , the appearance of pink red turns blue violet indicates presence of Anthocyanin.

### Coumarin:

3 ml of 10% NaOH was added to 2 ml of aqueous extract formation of yellow colour indicates coumarins.

### Emodins:

2 ml of  $NH_4OH$  and 3 ml of benzene was added to extract appearance of red colour indicates presence of emodins.

**Alkaloids:**

A quantity (3 ml) of concentrated extract was taken into a test tube and 1 ml HCl was added the mixture was heated gently for 20 min cooled and filter, the filtrate was used for following test.

a)Wagner test: Filtrate was treated with Wagner's reagent; formation of brown reddish precipitate indicates presence of alkaloids.

b)Hager's test: Filtrate was treated with Hager's reagent, presence of alkaloids confirmed by the yellow colored precipitate.

**Phytosterol:**

Salkowski's test: Extract was treated with chloroform and filtered. The filtrate was treated with few drops of concentrated H<sub>2</sub>SO<sub>4</sub> and shakes, allow standing, appearance of golden red indicates the positive test.

**Phlobatannins:**

Deposition of red ppt when aqueous extract of each plant sample is boiled with 1% Aqueous HCl was taken as evidence for presence of Phlobatannins.

**Cardial Glycosides:**

Keller-Killani Test: Plant extract treated with 2 ml glacial acetic acid containing a drop of FeCl<sub>3</sub> .A brown colour ring indicates the presence of positive test.

**Chalcones:**

2 ml NH<sub>4</sub>OH was added to 0.5 gm ethanolic extract of each sample, appearance of red colour showed the presence of chalcones.

**Fixed Oils and Fats:**

A small quantity of extract was press between two filter paper. Oil stain on the paper indicates the presence of Fixed oil and fats.

**RESULTS AND DISCUSSION**

Table no. 1 shows the results of phytochemical analysis of fruits of *A.occidentale* Linn and *T.catappa* Linn. Acetonic extract of fruits of *A.occidentale* shows the presence of Steroid, Saponin, Alkaloids, Phytosterol and fixed oils & fats whereas Tannin, Anthocyanin, Coumarins, Emodins Phlobatannin, Cardial Glycosides and Chalcones were absent.

**Table 1: Phytochemical analysis of Acetonic Extract of Fruits of *Anacardium occidentale* L.and *Terminalia catappa* L.**

Sr.No	Phytochemicals	<i>Anacardium occidentale</i> L.	<i>Terminalia catappa</i> L.
1	Alkaloids Wagner's Hager's	+ +	- +
2	Saponin Foam test	+	+
3	Steroid	+	+
4	Tannin Lead acetate test	-	+
5	Anthocyanin	-	-
6	Coumarins	-	+
7	Emodins	-	-
8	Phytosterol	+	+
9	Phlobatannins	-	-
10	Chalcones	-	-
11	Cardial Glycosides Kellar-Killiani test	-	-
12	Oils and Fats	+	+

+ = Present; - = Absent

Ayepola et.al (2009) also determined three phytochemicals as Alkaloids, Tannin and Saponin from *Anacardium occidentale* L.[4]. Sujatha et.al (2011) found 10 phytochemicals from *Anacardium occidentale* L. [13].

Acetonic extract of *T.catappa* leads to the presence of Steroid, Tannin, Saponin, Coumarins, Alkaloids, Phytosterol and Fixed oil and Fats whereas Anthocyanin, Emodins, Phlobatannin, Cardial Glycosides and Chalcones were absent.

Jagessar et.al (2012) calculated 20 phytochemicals from the leaves of *Terminalia catappa* L.[14]. Babayi et.al (2004) determined 13 phytochemicals from leaves of *Terminalia catappa* L. [15] Opara et.al (2012) also showed the presence of 9 phytochemical from leaf extract of *Terminalia catappa* L.[16].

#### REFERENCES

- [1] Baker, H. G. *Plants and Civilization*. 2nd ed. Macmillan Press Limited, New York. **1970**
- [2] Taylor, L. *The healing power of Rain forest Herbs*. Dioscorides Press, Canada. **2005**.
- [3] Yadav S.R. and Sardesai M.M. Flora of Kolhapur District, Shivaji University, Kolhapur. (M.S) India. **2002**, P.P. 127 & 191
- [4] Ayepola, O.O and Ishola, R.O, *Advance in dental Sciences*, **2009**, 3(1):1-3
- [5] Kannan, Rajesh V, Sumati C.S., Balasubramanian V. and Ramesh N. *Botany Research International* **2009**, 2(4) : 253 – 257,
- [6] Mathew A.S. Chauhan M.G. and Shah B.K. *Ancient science of Life*. **1998**, 18 (2) :1-10
- [7] Masuda T, Yonemori Y, Oyama Y, Takeda T, Tanaka T. *J Agric Food Chem*. **1999**, 47:1749-1754.
- [8] Fan YM, Xu LZ, Gao J, WangY, Tang XH, Zhao XN,. *Fitoterapia*. **2004**, 75(3-4):253-260.
- [9] Kloucek P, Polesny Z, Svobodova B, Vlkova E, Kokoska, L. *J Ethnopharmacol*. **2005**, 99(2):309-312.
- [10] Trease G.E., and Evan W.C., *Pharmacognosy* ,Ed 12, English language Book society ,Balliere Tindall, **1983**, 309-315 and 706-708.,
- [11] Kokate C.K, Purohit A. P. and Ghokhale S.B. *Pharmacognosy*, Nirali Prakashan, Pune, India. **1997**.
- [12] Hegde Karunkar and Joshi Arun B, *Der Pharmacia letter*, **2010**, 2(3):255.
- [13] Sujatha S., josheph Baby and Antony. *Internet Journal of Food Safety*, **2011**, 13:150-156.
- [14] Jagessar R.C. and R. Allen. *Part-I: Natural & Applied Sciences*. **2012**, 3(3):17 - 26.
- [15] Babayi H.,Kolo I., Okogun J.I., and Ijah U.J., *Biokemistri*, **2004**, 16(2):106-111.
- [16] Opara F. N., Anuforo, H. U., Okechuk Wu, R. I., Mgbemena, I. C., Akujobi, C. O. and Adjero, A., *Journal of Emerging Trends in Engineering and Applied Sciences (JETEAS)* **2012**, 3 (3): 424-428.