



## PHARMACOGNOSTIC EFFECTIVENESS OF *BALANITES AEGYPTIACA* (L.) DELILE

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### ABSTRACT

*Balanites aegyptiaca* (L.) Delile a tree species belonging to Zygophyllaceae (Balanitaceae) more commonly known as Angarviksha, Balanite, Desert date, Soapberry tree, Thorn tree and Egyptian balsam tree is found in most arid, semiarid to sub humid and hot dry areas has splendid medicinal properties. Investigations on Pharmacognostic effectiveness of leaves of *Balanites aegyptiaca* (L.) Delile was carried out using various parameters like organoleptic evaluation, histochemistry, preliminary phytochemical investigation and percentage extractives to detect the presence of active components. Pharmacognostic study revealed many positive results for secondary chemical constituents except protein. Highest percentage extractives were observed in distilled water followed by acetone.

Keywords: *Balanites aegyptiaca* (L.) Delile, Pharmacognostic effectiveness, Histochemistry, Phytochemistry.

### Introduction

Indian history of medicinal plants is dated back 3500 BC. The curative properties of plant have been mentioned in Suktas of Rigveda and Atharveda. Ayurveda has also described lots of plants with their therapeutic properties (Kirtikar and Basu 1999; Khare 2007). *Balanites aegyptiaca* (L.) Del. is belongs to family Zygophyllaceae (Balanitaceae) commonly known as Angarviksha, Balanite, Hingan, Desert date, Soapberry tree, Thorn tree and Egyptian balsam tree Anonymous (1955). The name Balanites was given by Alire Delile in 1813 derived from Greek for fruit resemble acorn and aegyptica means, this plant is extensively found in Egypt Gupta et al (2012). It is one of the most common but neglected wild plant species of the dry land areas of Africa and South Asia (Hall and Walker 1991, Okia et al 2011). In India, it is particularly found in Rajasthan, Gujarat, Madhya Pradesh, Maharashtra and Deccan. The drug Balanites has been used in indigenous system of medicine since long time. It cures vatta and kapha. Different parts of plant have been mentioned as useful to treatments of skin diseases (Unani), lecoderma, boils. Fruit has anthelmintic, analgesic, anti – dysenteric properties, it cures ulcer (Ayurveda), rat bits. According to Sushruta, the plant is prescribed in the treatment of snake bites. It also used as a detergents (pulp of fruits) and bark is as poison fish. The decoction of roots is tonga emetic. The oil is used as a remedy for sleeping sick and as purgative Barley (1962). In folk medicine, the brown outer rind of fruit is used in the treatment of skin diseases, root bark in treatment of malarial and fruit extract as hypoglycemic agent (Katewa et al., 2004; Koch et al., 2005; Gad et al., 2006). Known its

evident capacity as medicinal plant Balanite is not much investigate.

### Material and Methods

The plant material of *Balanites aegyptiaca* (L.) Del. was collected from the Ahmednagar – Solapur, (M.S.) highway and used for the present study. Analysis was carried for leaf as medicinally efficient organ. Pharmacognostic study included organoleptic evaluation, Histochemistry, Phytochemistry and Percentage extractives Khandelwala (2005). Organoleptic evaluation was carried out observe and record macroscopic characters Wallis (1985). Histochemistry was carried out to localize the presence of secondary metabolites and other chemical content Johansen (1940), Krishnamurty (1988). Phytochemistry was carried out for detection of secondary metabolites in both water and alcohol extracts Harborne (1973). Percentage extractives were recorded in different solvent systems along with water.

### Results and Discussion

#### Organoleptic evaluation:

**Shape:** oval, obtuse or broadly pointed, **Size:** Length 1 to 5 cms and Breadth 1.5 cms, **Colour:** External Light Green and Internal dark Green, **Odour:** Characteristic, **Taste:** Bitter, **Extra features:** Surface glabrous, **Texture:** Thin and leathery (Table 1-5)

The objective of Pharmacognosy establishes the relationship between chemical constituents of drugs and their therapeutic effectiveness which help to standardize the plant Trease and Evans (2002). The histochemical results revealed localization of Tannins, Starch and Alkaloids ranging from epidermis to mid rib

region. It also showed presence of sugar and saponin throughout the section which can be confirmed by work done by Hardman and Sofowora (1970). Phytochemistry revealed similar results for alkaloid as reported by Saboo et al. (2014). The percentage extractives in different six solvents showed minimum percentage extractives 10% was in Diethyl ether and maximum 80% in Distilled water followed

by Acetone. Overall histochemical and phytochemical study showed positive results for secondary metabolites similarly reported by other researchers like Salwa and El Hadidi (1988); Saharan et al. (2008); Hammouda et al (2005); Chothani and Vaghasiya (2011) and Saboo et al. (2014).

**Table 1-** Histochemistry:

Sr. No.	Test	Location	Result
1	Tannin	Epidermis, Palisade cells	+ve
2	Starch	Epidermis, Midrib region, Trichomes	+ve
3	Alkaloids		
	Wagner's	Palisade and Midrib region	+ve
	Mayer's	Epidermis and Midrib region	+ve
	Dragendorff's	Palisade and Midrib region	+ve
4	Sugar	Palisade	+ve
5	Saponins	Throughout section	+ve
6	Lipid	Epidermis	+ve
7	Protein	-	-ve

+ve – present, -ve absent

**Table 2-** Phytochemistry:

**Table 2.1** Distilled water extractives:

Sr. No.	Test	Reagent	Result
1	Tannin	Acidic FeCl <sub>3</sub>	+ve
2	Starch	I <sub>2</sub> KI	-ve
3	Sugar	Benedict's	+ve
4	Saponins	Distilled Water	+ve
5	Anthro-quinones	Benzene +10% NH <sub>4</sub> OH	-ve
6	Protein	Millons	-ve

+ve – present, -ve absent

**Table 2.2** - Alcoholic extractives:

Sr. No.	Test	Reagent	Result
1	Alkaloids	Wagner's	+ve
		Mayer's	+ve
		Dragendorff's	+ve
		Hager's	+ve
2	Glycoside	Benzene	+ve
3	Flavonoids	conc. HCL + mg turning	-ve

+ve – present, -ve absent

**Table 3-** Percentage Extractives:

Sr. No.	Solvent used	Weight of empty porcelin dish 'A' gms.	Weight of porcelin dish with extract 'B' gms.	Weight of extract (gms.)	Percentage extractives
1	Diethyl ether	51.60	51.70	0.10	10
2	Petroleum ether	52.90	53.30	0.40	40
3	N- Butyl alcohol	51.50	51.68	0.18	18
4	Benzene	47.51	47.80	0.29	29
5	Acetone	59.10	59.15	0.50	50
6	Distilled Water	47.20	48.00	0.80	80

## Conclusion

The histochemical and preliminary Phytochemical results of crude drug of Balanite s reveals the presence of Tannins, Starch, alkaloids, glycosides, sugars, saponin and lipids which are useful in various preparations of

drugs. Thus the standardization parameters like organoleptic evaluation, histochemistry, phytochemistry and percentage extractives of leaf assessed for the quality of plant material are also helpful for detection of adulteration. On account of these chemicals it can be concluded

that investigations of the drug Balanite has importance in medicinal systems.

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