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An Important Ethnomedicinal Plant *Balanite Aegyptiaca* Del.

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Abstract

For centuries traditional medical systems (TMS) were the primary medical system in the countries of origin, and now nevertheless the present dominance of the Western scientific medical model, citizens and health-caregivers are starting to rely and trust TMS. The usage of herbs to treat a variety of different ailments is universal, and exists in every human culture on Earth different Ethno medicinally important plant are available in our surrounding which having lots of medicinal importance. In this paper we are focusing on importance of *Balanites aegyptiaca* Del., also known as 'Desert date' (Synonyms: *Ximenia aegyptiaca* L.) family Zygophyllace,. Ethnobotinicaly it was reported as a good for jaundice, intestinal worm infection, wounds, malaria, syphilis, epilepsy, dysentery, constipation, diarrhea, hemorrhoid, stomach aches, asthma, and fever. It is distributed tropical areas and cultivated by seedling and propagation. In this paper we are also discussing about morphological character of Leaves, Flowers, Habit, Diagnostic characters. Chemically it's very enriched plant; present the number of Chemical constituents like protein, lipid, carbohydrate, alkaloid, saponin, flavonoid, and organic acid quercetin-3-rutinoside;furanocoumarin bergapten and dihydrofuranocumarin D- marmesin, beta-sitosterol, bergapten, marmesin, and beta-sitosterol glucoside,balanitin-1,-2, and -3, Balanitoside yamogenin. Scientifically this plant is reported as good Anthelmintic activity, Antibacterial activity, Antivenin activity, Anticancer activity Anti-inflammatory and analgesic activity, *In vitro* antioxidant, xanthine oxidase and acetylcholinesterase inhibitory activities, antinociceptive , Antidiabetic activity Antiviral activity Wound healing activity, Hypocholesterolemic activity and Diuretic activity.
Keywords: *Balanites aegyptiaca* Del antimicrobial activity, antitumor activity, Antidiabetic activity Antiviral activity**.**

1. Introduction

Traditional medicine has a long history of serving peoples all over the world. Medicinal plant is an important element of indigenous medical systems in China as well as elsewhere. The enthnobotany and ubiquitous plants provide a rich resource for natural drug research and development. In recent years, the use of traditional medicine information on plant research has again received reman Evidences of this early association have been found in the grave of a Neanderthal man buried 60 000 years ago. Pollen analysis indicated that the numerous plants buried with the corpse were all of medicinal value. The earliest known medical document is a 4000-year-old Sumerian clay tablet that recorded plant remedies for various illnesses by the time of the ancient Egyptian civilization, a great wealth of information already existed on medicinal plants. Among the many remedies prescribed were mandrake for pain relief, and garlic for the treatment of heart and circulatory disorders. This information, along with hundreds of other remedies, was preserved in the Ebers papyrus about 3500 years ago. In India, herbal medicine dates back several thousand years to the Rig-Veda, the collection of Hindu sacred verses. This has led to a system of health care known as Ayurvedic medicine. One useful plant from this body of knowledge is snakeroot, *Rauwolfia serpentina*, used for centuries for its sedative effects. In the other parts of the world, medicinal plants are also an important element of indigenous medical systems. For example, in the northwestern Amazon, indigenous people use at least 1300 plant species to create *drogas do certao* or "wildness drugs." In Southeast Asia, traditional healers use 6500 different plants to treat malaria, stomach ulcers, syphilis, and other disorders Western medicine can be traced back to the Greek physician Hippocrates (460-377 BC), known as the Father of Medicine. Hippocrates believed that a disease had a natural cause and used various herbal remedies in his treatments. Early Roman writing also influenced the development of Western medicine, especially the works of Dioscorides (1st century AD). In all parts of the world, indigenous people discovered and developed the medicinal uses of native plants, but it is from the herbal medicine of ancient Greece that the foundations of Western medicine were established[1].

2. Study of *Balanites Aegyptiaca* Del

2.1 Characteristics of Zygophyllaceae Family:

The bean caper family, is a loose-knit assemblage of 22 genera and 285 species that mainly grow in the desert or saline environments of temperate and tropical regions. Most members are shrubs to small trees, often resinous, with opposite or spirally arranged leaves. The five-parted flowers typically have 10 anthers, each with a gland, and a well-developed nectary disk Fruit. families Zygophyllaceae and Krameriaceae compose the order Zygophyllales[2].

2.2 Morphological Study of *Balanites aegyptiaca* Del.

Tree: It is multibranched, spiny shrub or tree up to l0 m tall. Crown spherical, in one or several distinct masses[3].

Leaves: Leaves with two separate leaflets; leaflets obovate, asymmetric, 2.5 to 6 cm long, bright green, leathery, with fine hairs when young leaves compound and spirally arranged on the shoots, dark green with 2 firm coriaceous leaflets; dimensions and shapes varying widely.

Petiolecanaliculate, from 5 mm to 20 mm with a short rachis. Most accountsindicate a maximum length of 8 mm for Uganda. Margi n of each leafletentire; lamina generally up to 6 cm long, 4 cm broad, although apparentlysmaller (1-3 x 0.3-1.5 cm) in the Sahara and in Palestine[3].

Trunk: Trunk short and often branching from near the base[3].

Bark: Bark dark brown to grey, deeply fissured. Branches armed with stout yellow or green thorns up to 8 cm long[3].

Inflorescence: Inflorescence a sessile or shortly pedunculate fascicle of a few flowers.

Flower buds ovoid and tomentose. Individual flowers hermaphroditic, pentamerous an actinomorphic, 8-14 mm in diameter and generally greenish-yellow. Pedicels densely greyish, pubescent and rarely reaching 10 mm in length, although 15 mm is reported for Zambia and Zimbabwe.The usual length is about 8 mm[3].

Fruit: Fruit is a rather long, narrow drupe, 2.5 to 7 cm long, 1.5 to 4 cm in diameter. Young fruits are green and tormentose, turning yellow and glabrous when mature. Pulp is bitter-sweet and edible. Fruit ellipsoid, up to 4 cm long, green. Ripe fruit brown or pale brown with a brittle coat enclosing a brown or brown-green sticky pulp and a hard stone seed[3].

Seed: Seed is the pyrene (stone), 1.5 to 3 cm long; light brown, fibrous, and extremely hard. It makes up 50 to 60% of the fruit. There are 500 to 1 500 dry, clean seeds per kg[3].

Flower: Flowers in fascicles in the leaf axils, and are fragrant, yellowish-green. Flowers are small, inconspicuous, hermaphroditic, and pollinated by insects. Seeds are dispersed by ingestion by birds and animals. The tree begins to flower and fruit at 5 to 7 years of age and maximum seed production is when the trees are 15 to 25 years old[3].

2.3 Cultivation Aspects

Distribution: Natural distribution is obscured by cultivation and naturalization. it is believed indigenous to all dry lands south of the sahara, extending southward to Malawi in the rift valley, and to the Arabian Peninsula, introduced into cultivation in Latin America and India. It has wide ecological distribution, but is mainly found on level alluvial sites with deep sandy loam and free access to water, after the seedling stage, it is intolerant to shade and prefers open woodland or savannah for natural regeneration. It is a low land species[3].

Habitat and ecology: growing up to 1000 m altitude in areas with mean annual temperature of 20 to 30°C and mean annual rainfall of 250 to 400 mm[3].

Ethnobotinical uses: Aqueous extract of fruits showed spermicidal activity without local vaginal irritation in human being antidiabetic, treatment of jaundice. Seed is used as expectorant, antibacterial, antifungal, febrifuge, anthelmintic and purgative. Fruit is used in whooping cough, also in leucoderma and other skin diseases. Bark is used as spasmolytic. The seed oil is used to treat tumors and wounds Used as laxative, also used in treatment of hemorrhoid, stomach aches, jaundice, yellow fever, syphilis, and epilepsy, The bark is used in the treatment of syphilis, round worm infections, and as a fish poison[3].

2.4 Chemical Constituents of *Balanites Aegyptiaca* Del

It contains saponin, furanocoumarin, and flavonoid namely quercetin 3-glucoside, quercetin-3-rutinoside; 3-glucoside, 3-rutinoside, 3-7-diglucoside and 3-rhamnogalactoside of isorhamnetin Balanitoside (furostanol glycoside) and 6-methyldiosgenin, balanitin-3 (spirostanol glycoside), Balanitin-6 and -7: Diosgenyl saponins, two pregnane glycosides namely pregn-5-ene-3β,16β,20(R)-triol 3-O-(2,6-di-O-α-l-rhamnopyranosyl)-β-d-glucopyranoside (balagyptin), and pregn-5-ene-3β,16β,20(R)-triol 3-O-β-d-glucopyranoside major sapogenin is yamogenin, two alkaloid namely, N-trans-feruloyltyramine and N-cis-feruloyltyramine, and three common metabolites, vanillic acid, syringic acid; and 3-hydroxy-1-(4-hydroxy-3-methoxyphenyl)-1-propanone, beta-sitosterol, bergapten, marmesin, and beta-sitosterol glucoside, balanitin-1,-2, and -3[3].

2.5 Recent Work on *Balanites Aegyptiaca* Del

1. Anti-inflammatory and analgesic activity of *Balanites aegyptiaca* in experimental animal models[4].
2. Antidiabetic Activity of Standardized Extracts of *Balanites aegyptiaca* Fruits using Cell-based Bioassays[5].
3. Antimicrobial Potential of *Balanites Aegyptiaca* (L)[6].
4. Antiasthmatic and antianaphylactic activity of *balanitesaegyptiaca* (delile)[7].
5. Anti-Ulcer activity of methanolic extract of *balanites aegyptiaca* bark[8].
6. Antitumor activity of balanitoside extracted from *balanites aegyptiaca* fruit[9].
7. Hepatoprotective activity of bark of *balanite aegyptiaca* linn[10].
8. Larvicidal activity of the fruit mesocarp extract of *balanites aegyptiaca*[11].
9. Insecticidal potentialities of *balanites aegyptiaca*[12].
10. *In-vitro* antioxidant activity of *balanites aegyptiaca*[13].
11. Antiproliferative activity of steroidal saponins from *Balanites aegyptiaca*—An *in vitro* study[14].
12. Antiimplantation activity of the Methanolic Extract of *Balanites aegyptiaca* Bark Del. in Rats[15].
13. wound healing activity of methanolic extract of balanites aegyptiaca l. leaves[16]
14. Fasciolicidal efficacy of *Albizia anthelmintica* and *Balanites aegyptiaca* compared with albendazole[17].
15. In vitro antioxidant, xanthine oxidase and acetylcholinesterase inhibitory activities of Balanites aegyptiaca (L.) Del[18].
16. Antibacterial and Anti-inflammatory Activities of Galls and Leaves from *Balanites aegyptiaca* (L.) Del[19].
17. Anticonvulsant activity of *balanites aegyptiaca* (l.) del. stem bark[20].
18. Anti-inflammatory activity of aerial part of *Balanites aegyptiaca* (l.) del against carrageenan induced paw oedema[21].

2.6 States of on Consideration of *Balanites aegyptiaca* Del Phytchemistry

1. Isolation and characterization of yamogenin from *Balanites aegyptiaca*[22].
2. Identification and quantification of phenolic compounds from *Balanites aegyptiaca* (L) Del (Balanitaceae) galls and leaves by HPLC-MS[23].
3. Balanitoside, a furostanol glycoside, and 6-methyl-diosgenin from *Balanites aegyptiaca* [24].
4. Alkaloids from *Balanites aegyptiaca*[25].
5. Steroid sapogenins—XIII: The constituents of *Balanites aegyptiaca*[26].
6. A furostanol saponin from fruits of *Balanites aegyptiaca*[27].
7. Pregnane glycosides from fruits of *Balanites aegyptiaca*[28].
8. Isolation and characterization of seed hydrocarbons from *Balanites aegyptiaca* (*B. roxburghii*) [29].
9. Determination of saponins in the kernel cake of *Balanites aegyptiaca* by HPLC-ESI/MS[30].
10. Balanitin-6 and -7: Diosgenyl saponins isolated from *Balanites aegyptiaca* Del[31].
11. The flavonoids of *Balanites aegyptiaca* (*Balanitaceae*) from Egypt[32].
12. Glycosyl part identified within *Balanites aegyptiaca* fruit protease[33].
13. The structures of balanitins, potent molluscicides isolated from *balanites aegyptiac*[34].
14. New Steroidal Glycosides from *Balanites aegyptiaca*[35].

3. Discussion and Conclusions

Balanites aegyptiaca Del is a well known plant used in the indian system of medicine, besides folklore medicine also claims its use jaundice, intestinal worm infection, wounds, malaria, syphilis, epilepsy, dysentery, constipation, diarrhea, hemorrhoid, stomach aches, asthma, and fever Research carried out using different *in vivo* and *in vitro* techniques of biological evaluation support most of these claims. Recent studies have focused mainly on its antimicrobial, hepatoprotective, anti proliferative and antioxidant activities Antidiabetic activity, Antiviral activity Wound healing activity, Hypocholesterolemic activity, Diuretic activity. Literature survey reveals that despite the enormous work done on this plant some of the pharmacological activities are still not proven scientifically. Some of the compounds present in are pharmacologically well known and provide additional supporting evidence for possible *Balanites aegyptiaca* Del mechanism of action. This review was an attempt to compile an up-to-date and comprehensive review of *Balanites aegyptiaca* Del that covered its distribution, description balanitin-3, Balanitoside, balagyptin, two alkaloid namely, N-trans-feruloyltyramine and N-cis-feruloyltyramine cultivation aspects traditional, morphological study and medicinal uses, phytochemistry and pharmacology.

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