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RESEARCH ARTICLE

A REVIEW WORK ON VALUABLE PLANT *Acacia tortillis*.

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Abstract

Acacia tortilis is one of the important species of genus *Acacia* belonging to family Leguminaceae. The various part of *Acacia tortilis* plant say leaves, pods, gum exudates and bark is found to be beneficial for the purpose of commercially as well as medicinally. The survival of this plant in arid zone is due to its ability to endure harsh condition and it is also help full to prevent soil erosion. In this review article the main focus is on the botanical characters, chemical composition and ethnomedicinal uses of *A. tortilis*.

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Introduction:-

Acacia is the largest genus in the Leguminosae- Mimosoideae with approximately 1200 species distributed mainly in tropical and subtropical regions [9]. Species of *Acacia* have an ability to flourish under adverse conditions. They can tolerate salinity and seasonal waterlogging and are adapted to environments with little and unreliable rainfall. Moreover, they are adapted to anthropogenic pressures [2], [5]. *A. tortilis* is a drought-resistant species [1]. The generic name 'Acacia' derived from the Greek word 'akis', meaning a point or a barb. The name 'tortilis' means twisted and refers to the pod structure. It is also known as umbrella thorn due to its umbrella like structure and in India it is commonly known as Israeli babool (Orva).

Taxonomy status:-

Kingdom : Plantae
Order: Fabales
Family: Fabaceae
Genus: *Acacia*
Species: *tortillis*
Synonymes: *Vachellia tortillis*

Ecology:-

This species ranges from subtropical desert to dry through tropical desert to very dry forest life zones. The umbrella tree is reported to tolerate annual precipitation of 10-100 mm, an estimated annual temperature of 18-28 °C and pH of 6.5-8.5. This species bear hot, arid climates with temperatures as high as 50 °C [3].

Botanical description:-

A. tortillis tree that may reach 20 in height with an umbrella-shaped and flat top canopy. Stem and branches are dark brown in the mature and reddish brown with grey lenticels in the young. Leaves are smooth to densely pubescent, 1-7 cm long, with 2-14 pinnae each with 6-22 pairs of leaflets. Flowers white or pale yellowish-white, fragrant, in round heads, solitary or in fascicles. Bark is grey-brown-black, rough and fissured. The spines are in pairs, some short and hooked up to 5 mm long, mixed with long straight slender spines up to 10 cm long. a contorted or spirally

twisted pod, yellowbrown, 5-15 cm long, with longitudinal veins and slightly constricted between the seeds. There are 5- 18 seeds/pod. Semi-dehiscent, i.e. the ripe pods open but remain on the tree without releasing the seed.

Chemical constitues:-

Fatty acid: 19% oleic acid, 72% linoleic acid, 60% linoleic acid [12].

Tannin: The leaves, and to a lesser extent the bark, of many species contained between 1 and 8% hydrolyzable tannins [12].

Gum: *A. tortilis* contain Uronic acid 8, Galactose 23, Arabinose 66, Rhamnose, Mannose [13], nitrogen 0.99%, protein content 6.18%, pH 6.46 [7].

Flavenoid: Apigenin-6,8-bis-C- β -d- glucopyranoside (vicenin)8 Rutin (quercetin 3-O-rutinoside) [12].

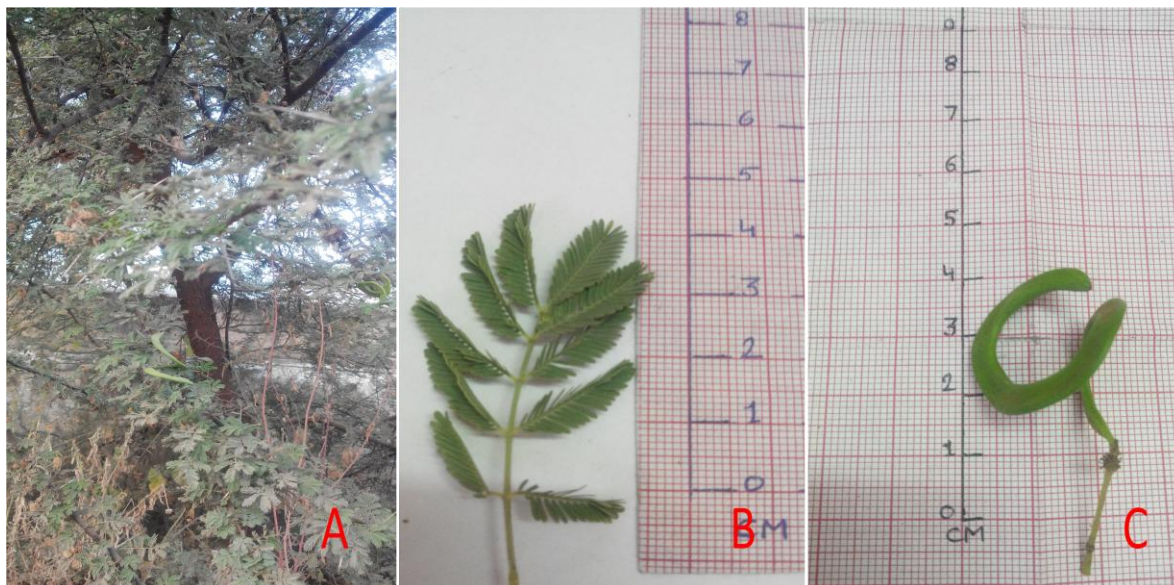


Fig 1: [A] Tree of *Acacia tortilis* [B] Leaves [C] Pod

Ethnomedicinal uses:-

Flower: 90% of the flowers abort and drop to the ground, providing additional important forage [14].

Gum: Gum obtained from *Acacia tortilis* and other species of acacia has been used as a food additive and for medicinal purpose [4].

Wood: Used for planking, boxes, poles, moisture proof plywood, gun and rifle parts, furniture, house construction and farm implements. [6].

Bark: The bark is reported to be a rich source of tannin so it is used as a dye [6]. *Acacia tortilis* root bark possesses antimalarial activity but would not be considered for follow up as an antimalarial candidate [10]. In cattle Tannins form protective layers on the skin and mucous membranes so it proves useful in cattle suffering from diarrhoea. In *A. tortilis* due to presence of tannins it is beneficial in diarrhoea in cattle [8].

Conclusion:-

Acacia tortilis is very important plant of arid and sub arid zone, it consist of numerous medicinal as well as commercial value. *Acacia tortilis* traditionally used in dysentery, pharyngitis, diarrhea, cough, cold, inflammation, gastric irritation, tuberculosis, hemorrhage, relief from pain in burn etc. But study on this valuable plant is limited.

References:-

- [1] Abdallah F, Noumi Z, Touzard B, Ouled Belgacem A, Chaieb M. (2008). The influence of *Acacia tortilis* (Forssk.) subsp. *raddiana* (Savi) and livestock grazing on grass species composition, yield and soil nutrients in arid environments of south Tunisia. *Flora* 203:116-125.
- [2] Abdelrahman HF, Krzywinski K. (2008). Environmental effects on morphology of *Acacia tortilis* group in the Red Sea Hills, North-Eastern Sudan and South-Eastern Egypt. *Forest Ecology and Management* 25.
- [3] A Guide to Medicinal Plants in North Africa. (2009). 14:15-16.

- [4] **Anderson D.M.W.** (1993). Some factors influencing the demand for gum arabic (*Acacia Senegal* (L.) Willd.) and other watersoluble tree exudates. *Forest Ecology and Management*. 53: 1-18.
- [5] **Ayyad MA**, Ghabbour SI. (1985). Hot deserts of Egypt and Sudan. In: Evenari, M., Noy-Meir, I., Goodall, D.W. (Eds.), *Hot Deserts and Arid Shrublands*. first ed. Elsevier Science and Technology Book Division.
- [6] **Baldwin Timothy C.**, Quah Poh E., Menzies Alan R. (1999). A serotaxonomic study of *Acacia* gum exudates. *Phytochemistry* .50: 599-606.
- [7] **Bisht.S**, Kant.R, Kumar. (2013). α -D-Glucosidase inhibitory activity of polysaccharide isolated from *Acacia tortilis* gum exudates. *International Journal of Biological Macromolecules* .59: 214– 220.
- [8] **Grace N.** Njoroge, Rainer W. Bussmann. (2006). Herbal usage and informant consensus in ethno veterinary management of cattle diseases among the Kikuyus (Central Kenya). *Journal of Ethno pharmacology* 108: 332–339.
- [9] **Mabberley DJ.** (1997). *The Plant Book: A Portable Dictionary of the Vascular Plants*, 2 nd edition. Cambridge University Press, Cambridge, UK.
- [10] **Nguta J.M.**, Mbaria J.M. (2013). Brine shrimp toxicity and antimalarial activity of some plants traditionally used in treatment of malaria in Msambweni district of Kenya. *Journal of Ethnopharmacology*.148: 988–992.
- [11] **Orwa et al.** (2009). *Agro forestry Database 4.0*. *Acacia tortilis*. 1-6.
- [12] **Seigler D.S.** (2003). Phytochemistry of *Acacia*—sensu lato. *Biochemical Systematics and Ecology*. 31: 845–873.
- [13] **Shirley C.**, Churms, A, listairM, Stephen arleneb, Steyn.(1986). Analytical comparison of gums from *acacia hebeclada* and other gummiferae species. *Phytochemistry*. 25:12: 2807-2809.
- [14] **Vir Satya**, Jindal S.K. (1994). Fruit infestation of *Acacia tortilis* (Forsk) Hyne by *Bruchidius andrewesi* Pic. (Coleoptera•Bruchidae) in the Thar Desert. *Forest Ecology and Management*.7