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Pharmacognostical view of unani single drug neem gum

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Abstract

To investigate the pharmacognostic analysis of the Unani drug Neem Gum obtained from the plant trunk of *Azadirachta indica* A. Juss**.** family Meliaceae. The air-dried and powder form of drug were studied by organoleptic, macroscopy and microscopic evaluation. The results show the information on the pharmacognostic characters of the plant exudate such as the presence of neem bark fragments with stone cells, calcium oxalate crtystals and phloem elements; group of stone cells, long fibres, dead elements of long fibres, phloem parenchyma cells, dark brown colored tissues from bark. These information's serve the important information to the identity and to determine the quality and purity of the plant material in the future.

1. Introduction

Neem is the most versatile, multifarious trees of tropics, with immense potential. It possesses maximum useful non-wood products (leaves, bark, flowers, fruits, seed, gum, oil and neem cake) than any other tree species. During the last five decades, apart from the chemistry of the neem compound, considerable progress has been achieved regarding the biological activity and medicinal applications of neem ((Kausik *et al*., 2002; David *et al*., 2019; Chinnaperumal *et al*., 2018; Mohammad *et al*., 2016). Phytochemicals like nimbin, nimbidin, nimbolide, and limonoids are isolated from *A. indica* and such types of ingredients play role in diseases management through modulation of various genetic pathways and other activities (Mohammad *et al*., 2016).

Various derivatives of the tree have potential use in toiletries, pharmaceuticals, the manufacture of agricultural implements and futrniture, cattle and poultry feeds, nitrification of soils for various agricultural crops, and pest control. Since neem is a natural renewal resource producing extencive useful biomass (Opender, *et al*., 1990).

These non-wood products are known to have antiallergenic, antidermatic, antifeedent, antifungal, anti-inflammatory, antipyorrhoeic, antiscabic, cardiac, diuretic, insecticidal, larvicidal, nematicidal, spermicidal and other biological activities (Girish and Shankara Bhat, 2008; Daniel *et al*., 2016).

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Neem Gum is exudates obtained from the plant trunk of *A. indica* family Meliaceae. Neem gum is water soluble, naturally occurring polysaccharide extracted from the bark of *A. indica* trees. Generally, neem gum contains D-galactose, arabinose, D-glucuronic acid, L-fructose, fucose, D-xylose, protein, Ca, Mg, K and Na salt (Rishabha *et al*., 2015; Asha and Navneet Kumar, 2015; Khushnuma *et al*., 2019). Neem gum has been used in various applications especially in cosmetics and medicines due to its water dispersible, cheap, nontoxic and biocompatible nature (Ramakrishna *et al*., 1979; Mukherjee and Srivasta, 1954). herapeutical and medicinal properties of Neem (*Azadirachta indica*) in context of Unani System of Medicine.

In Unani system of medicine Neem used for various pharmacological actions antipyretic, jaundice, antiseptic, digestive, antidiarrheal, anti-flatulent, concoctive, analgesic, skin diseases, cicatrizant, thirst quenching, teeth and gum tonic, eye tonic, antitussive, emmanagogue, headache reliever, anti hydrotic, anti-diabetic, useful in asthma, useful in burns and wounds. Neem gum used for tonic, stimulant, demulcent and anti catarrha (Haider *et al*., 2018). The pharmacognostical standardization of this indigenous drug analyzing in this study.

2. Materials and Methods

a. Drug material.

Plant material exudate of *A. indica* family *Meliaceae* were purchased from market Chennai, Tamil Nadu. A drug specimen of the sample was deposited in the institutional herbarium for future reference

b. Other Names:

Arabic	:	Neeb
Persian	:	Neeb
Bengali	:	Nim
English	:	Nim tree, Indian Lilac, Margosa tree
Gujarti	:	Limbado
Hindi	:	Nim and Nimb
Kannada	:	Bevinamaro
Malayalam	:	Veppa
Marathi	:	Limb
Oriya	:	Nimba
Punjabi	:	Bakam, Bukhain, Drekh, Mahanim
Sanskrit	:	Arishta
Tamil	:	Vembu, Veppem
Telugu	:	Veepachettu, Yepachettu
Urdu	:	Neem

c. Organoleptic evaluation

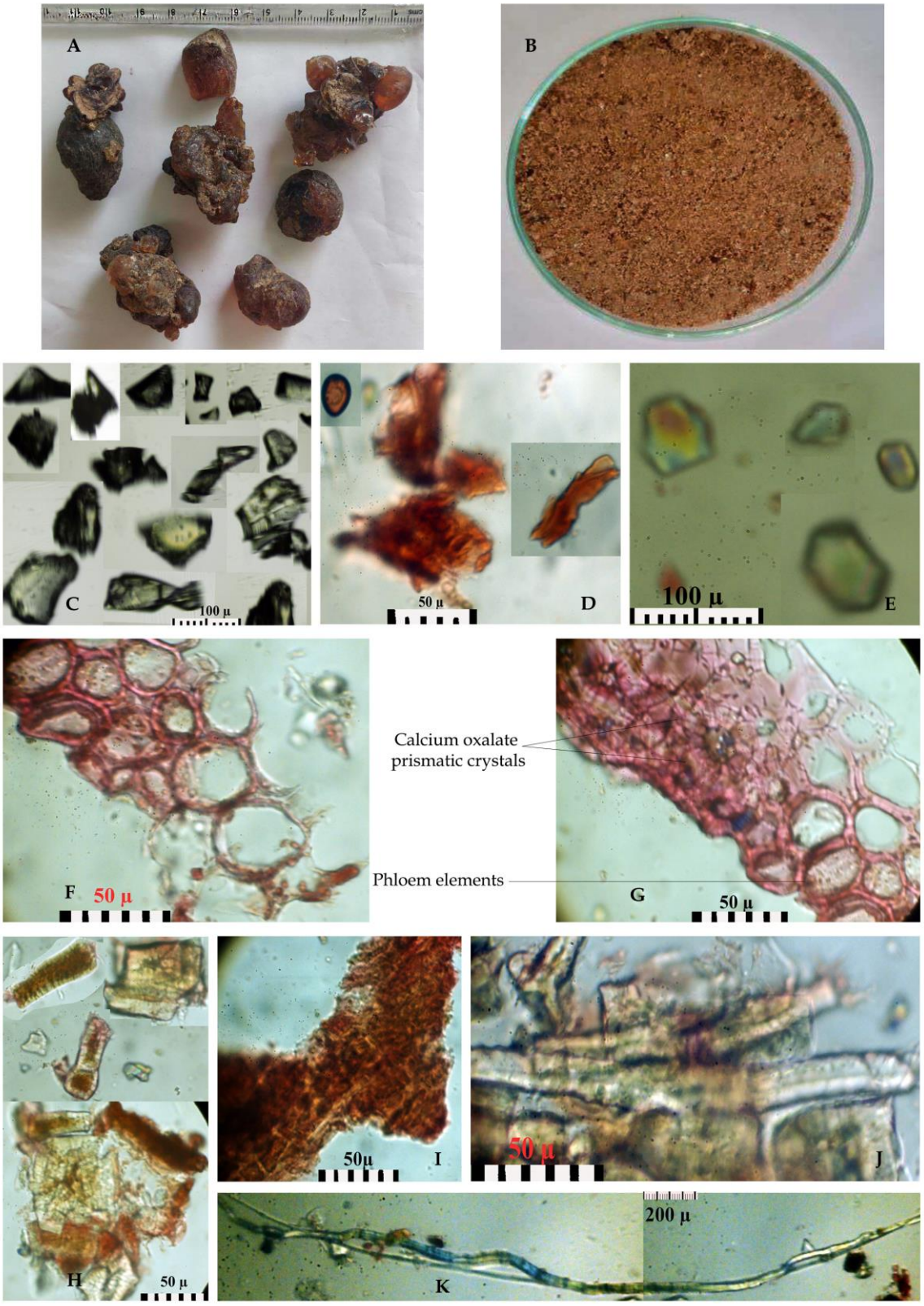
Various sensory parameters of the drug material (such as colour, odour, size, shape, and taste) were studied by organoleptic evaluation

d. Macroscopic evaluation

The drug was morphologically studied for its size, shape, surface, fracture and configuration. The macroscopy of crude drug includes its visual appearance to the naked eyes and its sensory characteristics. Simple microscope of magnification 10xs was used for the perception of special structural features such as: size and shape of the drug, colour and external marking, fracture and degree of uniformity of the particles. surface appearance by reflected light, shining particles, fibres and crystals.

e. Microscopic characters

Observation of powder of gum part reveals the presence of cells in a tissue and structure and morphology of a particular cell from the tree.



Figures; A: Neem gum exudate. **B:** Powder. **C:** Enlarged view of powder. **D:** Powder from outer part. **E:** Powder from inner part. **F:** Phloem parenchyma cells. **G:** Neem bark fragments. **H:** Stone cells. **I:** Dark brown fragments. **J:** Dead elements of phloem fibre. **K:** Long fibres.

3. Result and Discussion

a. Organoleptic characters

Colour- Light yellow, Odour – characteristic odour, Taste- no taste, surface-cracked or fissured

b. Macroscopic characters

Found as small tears or vermiform pieces; surface cracked or fissured, darkening with age; fresh gum has pink to bright amber colour, semi-transparent characteristic odour and not bitter to taste; hard to fracture; mixes with water and forms gum paste; along with Neem gum, bark remnants are also found; soluble in hot boiling water, dilute, HCl and dilute H_2SO_4 in con. HNO_3 it becomes yelllowish brown and jelly like.

c. Microscopic characters

Under microscope it shows multifaced, solid fragments, some are transparent with longitudinal glistening striations on surface; yellowish brown colored; neem bark fragments with stone cells, calcium oxalate crtystals and phloem elements; group of stone cells, long fibres, dead elements of long fibres, phloem parenchyma cells, dark brown colored tissues from bark.

4. Conclusion

The present pharmacognostic data emphasize the knowledge of quality and identity of the Unani single drug Neem Gum. This information will also be helpful to differentiate from the closely related other species gum and substances. In conclusion, the study analysis which are reported here can be considered as distinctive enough to identify and decide the authenticity of this drug.

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