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MISKITARAMASHIA

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ABSTRACT: Miskitaramashia is a special single drug in Unani system of medicine and it has been identified as Lallemantia royleana (Wall) Benth. Of the family Labiacae. Its pharmacognostical characters have also been reported here.

INTRODUCTION

Miskitaramashia is a versatile crude drug in Unani system of medicine for menstrual disorders, abortion and labour pain. It consists of the dried whole plant with root, stem and fruiting shoots.

When the identity of this crude drug has been referred in the literature, there is wide spread controversy among the earlier pharmacognocists and Unani Hakeems. Dymock. W. 1885 and Playfair. G. 1833 describe the crude drug Miskitaramashia elaborately without assigning any botanical name. Kirtikar. K.R., Basu. B.D. 1918 and Nadkarni. K.M. 1908 find Ziziphora tenuir Linn and Leucas stelligera Wall as the sources of this drug. Chopra R.N. 1956 contends Leucas stelligera Wall as Miskitara mashia. Hakim Daljit Sinha 1974 describes Mentha polygium as the source for this drug.

When the Miskitaramashia of Madras market was examined, it was not found to belong to any of the above sources and so an investigation was initiated into its botanical identity after conducting several pharmacognostical tests.

MATERIALS AND METHODS

Miskitaramashia was procured in the local market and its macroscopical characters were studied. The dried drug was treated as said by Johansen. D.A. 1939 and its root, stem, pedicel, fruiting calyx and seeds were sectioned and observed under the microscope for its anatomical characters. Quantitative microscopy was carried out as per the methods of Indian Pharmacopoeia.

5 gms of powdered sample was extracted successively with various non-polar and polar solvents, and the results are furnished. Qualitative examination for important principles was carried out in all the extracts.

Total glycoside content and glycoside aglycones were determined according to Krishnamoorthy U. and Seshadri T.R. 1962. Total tannin content was determined according to Evers and Elsdin 1929 and the results of the above findings are furnished.

After carrying out all the pharmacognostical works, the botanical source of Miskitaramashia was identified by referring J. D. Hooker's 'The Flora of British India'. The material was sent to Kew gardens for confirming the identification.

OBSERVATION AND RESULTS

Macroscopical characters:

Miskitaramashia in whole form was herbaceous with root, stem, flowering shoot, fruiting calyx and seeds. Whole plant was 30 cm. tall. The tap root was seldom branched, cylindrical, blackish in colour, with few root hairs, 7.5 cm long and 3 mm in diameter and without any modification'

The stem was erect, 3 mm in diameter, obtusely angled at the base, quadrangular above and with swollen nodes. The surface was hairy and ash coloured. The leaves were stripped off. From the scar at nodes it is inferred that the phyllotaxy was opposite. The flowers were in numerous whorls, each whorl with 4–6 flowers. In dried condition they were found appressed to the stem but when soaked in water they became declinate. Flowers were pedicellate and the pedicel was 2–3 mm long. The fruiting calyx was tubular, upto 1 cm tall, 15 nerved, hairy, 5 lobed among upper obtuse lobes lateral lobes were placed under the central and the lower two lobes were acute. The fruiting calyx was found enclosing an oblong blackish and unripened fruit or four dried nutlets, sometimes one or more suppressed.

Other floral parts were not seen. Seeds were three angled, narrowly oblong, 4 × 2mm in size, black coloured, crustaceous and with a hilum at the apex in the form of a white circle.

MICROSCOPICAL CHARACTERS

Root:

Root in cross section showed a cylindrical outline and it was mostly occupied by the xylem cylinder. The bark was very thin and easily peeled off. Vessels were found mostly in radial groups or solitary. They were pitted with simple perforation, 79–168–198 × 12–32–48 microns in size and few of them with black deposits. Tracheids were 168–266–350 × 16–20–24 microns sized. Patenchyma was scanty. Rays were mostly uniseriate. Few biseriate rays were also recorded.

Rays were mostly homogeneous. Fibres were nonseptate and 224–228–350 × 8–12–16–20 microns in size.

Stem:

Stem in cross section was circular at the base and quadrangular above. The epidermis was single layered, cutinised, trichotomous and cells were 12–20–24×4–8–12 microns in size. Two types of trichomes were found. Clothing trichomes were multicellular, uniseriate, upto 490 microns long and the glandular trichomes with single celled spherical head of 24–28 microns and unicellular neck of 4 microns. Cork was not present. Cortex was collenchymatous at four angles and the cells were 16–20–40 microns in diameter. Parenchyma was 2–3 layered and the cells were 36–56–84×20–36 microns in size. Endodermis of thin walled cells were prominently differentiated and it composed the cells of 32–48–60 × 16–20 microns. Pericycle and phloem were got destroyed in the course of drying the crude drug. Phloem contained tannin and fatty matter. Xylem was found in continuous cylinder. Vessels were in radial groups with spiral or pitted thickening and simple perforation. They were 96–280–336–476 × 28–35–42 microns in size. Few of them harboured black deposits which got stained with Sudan III. Rays were mostly uniseriate, rarely biseriate and homogeneous. Fibers were nonseptate and 490–616–752–1120 and 14–21–35 microns sized.

Pith was broad, homogeneously parenchymatous, frequently becoming hollow and the cells were 21–42–98–140 microns in size.

Fruiting calyx:

The pedicel in cross section showed a single horizontal vascular bundle where as the calyx showed five groups of fibrous strands enclosing vascular elements. The inner epidermis was pappilose and lignified. Both the epidermis in surface view were wavy walled having two types of trichomes: 1. Unicellular clothing trichomes upto 140 micron long and 28 micron in diameter and 2. Multicellular uniseriate clothing trichome upto 350 microns long.

Seeds:

Seeds in cross section showed a triangular outline. The outer most testa consisted of a single row of parenchymatous cells 98 × 70 microns in size with plenty of mucilage and compound starch granules of 4 – 8 microns. These cells were hygroscopic. The tegmen was sclerenchymatous with a single row of stone cells in the size of 40 × 20 microns. Perisperm was present in little quantity. Cotyledons were two in number and parenchymatous. The cells were 32 × 8 microns in size and they contained plenty of aleurone grains.

Chemical Analysis:

1	Loss on drying	9.72% w/w
2	Ash content	14.87% w/w
3	Water soluble ash	9.60% w/w
4	Alkalinity of water soluble ash (0.1 NHCl/gm)	2.53%
5	Acid insoluble ash	2.20% w/w
6	Extraction in succession:	
i.	Petroleum ether (60–80°C)	1.38% w/w
ii.	Ether	0.76% w/w
iii.	Benzene	0.72% w/w
iv.	Alcohol	1.85% w/w
v.	Water	14.29% w/w
7	Total glycosides	1.15% w/w
8	Glycosides as aglycones	0.49% w/w
9	Total tannin	0.90% w/w

IDENTIFICATION OF THE SOURCE OF MISKITARAMASHIA

Steps in Identification Family:

Pithed stem and dicotyledonous seeds show that Miskitaramashia is Dicotyledonous. The presence of superior ovary, quadrangular stem, whorled inflorescence, tubular calyx with 5 subequal lobes and 15 nerves and 4 nutlets show that it is a member of the family Labiatae.

Tribe:

Coming to the Tribe level, Hooker J. D. describes 7 tribes in this family and they are screened as follows taking the available few morphological characters into consideration.

Tribe 1: Ocimoideae: In this tribe members are scented. The characters of their calyx are also entirely different from our material. So this tribe is eliminated.

Tribe 2: Satureineae: Its members have densifid whorls of very small flowers or panicled spikes and the calyx is 5 toothed and 10 – 13 nerved. So it is eliminated.

Tribe 3: Monardeae: All the members are shrubs. If it is a herb the arrangement of calyx is different. So it is rejected.

Tribe 4: Nepetae: Members are herbs with axillary or terminal whorls of flowers, tubular calyx with 15 nerves and 5 lobes. These characters are also present in Miskitaramashia and so this tribe is selected.

Genus:

Coming to the generic level, the above selected tribe Nepetae has 3 genera. They have also been screened as follows:

Genus 1: Nepeta: In this genus the species have 5 equally teethed or 2 lower narrowly teethed calyx. In our material calyx lobes are not equal. Though the two lower lobs are narrower, the upper 3 lobes are not equal and spread one plane. So this genus is eliminated.

Genus 2: Dracocephalum: In this genus the species have 5 teethed calyx, teeth all sub equal or upper much the largest or 3 upper combined into a broad lip. It is not the case in our material and it is eliminated.

Genus 3: Lallemantia: Characteristically this genus has the calyx in which the upper lip has 3 obtuse lobes, of which the lateral are placed under the Central. The same is present in our material. So the genus a Lillemantia Fish & Mey is selected.

Species:

When coming to the species level, it is found that the genus Lallemantia comprises of only one species, ie. Lallemantia royleana Benth. So it is concluded that our material Miskitaramashia is Lallemantia royleana Benth belonging to the family Labiatae. The anatomy of the stem and seed also confirms this.

Discussion:

In the identification of the taxonomy of the single drug Miskitaramashia, the available characters of the drug viz. the habit, the arrangement and the nature of

fruiting calyx and seeds were given much importance because the other floral characters were not present in the drug. But still the source of the drug could be identified after a strenuous work by the elimination and selection method. For confirming our work, the materlal was sent to the scientists of Royal Botanic Garden who promptly cnnfirmed the source of the drug as Lallemantia royleana Benth of Labiatae.

The chemical analysis shows that the plant contains sterols, alkaloids, glycosides and tannins.

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