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ORIGINAL ARTICLE **OPEN ACCESS**

An Exploratory Study on Pashika - One Unidentified Medicinal Plant Mentioned in Ashatanga Nighantu (An Ayurvedic Lexicon)

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ABSTRACT
Introduction- In the old time knowledge of plants was deep as people were directly linked with plants. Therefore there is very less documentation of plants identity. Authors of lexicons followed previous written texts and lexicons, thus quoted plants of their era in addition to previous ones. Although Indian flora increased as a result of this succession of followers, botanical identification was still lacking. The nomenclature of these plants however both signals their identification and contributes to identity confusion. This led to a decline in the status of the flora as a result of miscommunication between the literature and still-unknown plants. Ashtanga Nighantu is one of the old lexicons, chapter Viprakirnagana presents world of that era. This contains synonyms for133 medicinal plants. Out of them some are still unidentified and not even documented at any other place; some have lost their identity by intermixing their names with other plants in the follower lexicons. Pashika, is one such unidentified plant. This plant has been studied for confirmation of its botanical identity and thus bridge the gap between classical documentation and existing flora. Methodology- The last chapter written in Sanskrit language of an Ayurvedic lexicon named Ashtanga Nighantu; edited by Acharya Priyavrata Sharma was analysed. Etymological derivations of the plant were done with the help of Ashtanga Nighantu by K.S. Viswanathana, Sanskrit to Hindi translation dictionaries. Other texts taken into view were Vedon mai Ayurveda, Brihatrayi, Laghutrayi; 27 lexicons, medicinal databases, and indexed journals accessed through Google Scholar, PubMed, and Scopus and Ayush research portal. Result- Interpretations of synonyms namely Paniya; Pashika ; Bijavrksha; Jivavrksha suggests that the plant is; grows near water; bird catcher; having numerous seeds; habitat of birds respectively. All these evidences matches with characters present Pisonia grandis R Br. The plant is not mentioned in any other Ayurvedic text. Discussion- Pisonia grandis R Br. are found in tropical habitats, mainly Indo-Pacific. (Paniya) This tree attracts birds to make nests upon it. (Jivavrksha) The trees produce multi-branched infructescences, each bearing from 12 to over 200 long seeds. (Bijavrksha) The extreme stickiness of the seeds evidently evolved to stick to birds. (Pashika) Conclusion- Pisonia grandis R Br. Correlates with Pashika mentioned in Ashtanga Nighantu.
Keywords: *Pisonia grandis R Br., Pashika, Bijavrksha, Ashtanga Nighantu, bird catcher*

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INTRODUCTION

Medicinal plants are the part and parcel of our life since the beginning of life journey. Plants have been considered as family members; and being used in our rituals, grief and happiness and as medicines. In the old time knowledge of these plants was deep as people were directly linked with plants. Therefore there is very less documentation of plants identity. In Vedas plants were mainly mentioned as ingredients of Yagya (sacrificial rituals in which offering are made to different Gods and Goddesses) and a few as medicine.[1] In continuation to this several plants were mentioned in Brihatrayi (Caraka Samahita; Sushruta Samahita; Vagbhatta Samahita) along with their types and sub types. Laghutrayi (Sharangadhara Samahita; Bhavaprakasha Samahita; Madhava Nidana) and Nighantus (Ayurvedic lexicons) show increase in knowledge of flora according to advancement in time. Medieval period was richest source of plant documentation. Authors of lexicons followed previous written texts and lexicons, thus quoted plants of their era in addition to previous ones. Although Indian flora increased as a result of

this succession of followers, botanical identification was still lacking. The nomenclature of these plants however both signals their identification and contributes to identity confusion.
All this results into controversies; some plants got intermixed and some remain unexplored. This led to a decline in the status of the flora as a result of miscommunication between the literature and still-unknown plants.
The Indian traditional medical system, known as Ayurveda is utilizing ingredients of plant, mineral, animal, and metal origins, Ayurvedic medications are created. However, plants make up about 80% of the ingredients in Ayurvedic cuisine. Even though the 1500 plants listed in the Ayurvedic ancient texts are utilised to make medicines today, only roughly 600 of those plants are regularly used in India. There is debate regarding the precise botanical relationships of several plant medicines included in Ayurvedic textbooks. Since plants and plant remedies in Ayurveda were given Sanskrit names, typically based on the "doctrine of signature," morphological appearance, characteristics, and action, the interpretation of these names throughout time led to the acceptance of multiple botanical species for a single plant drug.[2] Ashtanga Nighantu is one of the old lexicons, which is synonymous description of 26 groups of medicines mentioned in Vagbhatta Samahita. Other than this there is one chapter in the end; entitled as Viprakirnagana. This chapter is a big contribution of author; presenting world of that era. This contains synonyms for 381 items, including 133 medicinal plants. Out of them some are still unidentified and not even documented at any other place; some have lost their identity by intermixing their names with other plants in the follower lexicons [3].
To fill in this gap, a critical literary analysis is necessary so that one may relate the characteristics of unidentified plants, such as folklore plants, with the suggestions stated in Ayurvedic literature. By discovering the previously unknown identities that are already listed in Ayurvedic lexicons, it will be possible to enrich the flora.
Keeping this panorama in mind the efforts have been made to throw some light on a medicinal plant named as Pashika, which is first unidentified plant mentioned in Viprakirnagana of Ashtanga Nighantu; and thus adding one more identity in medicinal plants.

MATERIAL AND METHODS

The last chapter of an Ayurvedic lexicon named Ashtanga Nighantu; edited by Acharya Priyavrata Sharma; in Sanskrit language ; published by The Kuppuswamy Sastri Research Institute of Madras (Chennai) in 1973 was explored in search of medicinal plants. These plants were then classified into well established, controversial and unidentified. First unidentified plant Pashika was taken into consideration for analysis. It was first analysed in an English and Tamil translation of Ashtanga Nighantu by Dr. K.S. Viswanathana Sarama.[4] The verse was translated from Sanskrit to English using existing published dictionaries. Names of the plant were interpreted based on word origins and etymology. The nomenclature and characteristics thus obtained were searched, matched and compared with other relevant publications such as Vedon mai Ayurveda (the book has mentioned the presence of Ayurveda in Vedas), Brihatrayi (Caraka Samahita; Sushruta Samahita; Vagbhatta Samahita), Laghutrayi (Sharangadhara Samahita; Bhavaprakasha Samahita; Madhava Nidana)and 23e-Nighantus by the National Institute of Indian Medical Heritage, CCRAS, New Delhi, India, viz., Saushruta Nighantu, Paryayaratnamala, Abhidhanaratnamala, Hridyadipaka Nighantu, Shabdacandrika, Abhidhanaratnamanjari, Camatkara Nighantu, Nighantushesha, Saraswati Nighantu, Rajavallabha Nighantu, Laghu Nighantu, Shivakosha, Sidhamantra, Sidhasara Nighantu, Madanadi Nighantu, Dhanvantari Nighantu, Sodhala Nighantu, Kaiyadeva Nighantu, Dravyagunasangraha, Raja Nighantu, Madanapala Nighantu, Bhavaprakasha Nighantu, Madhava Dravyaguna , Amarkosha and 4 published Nighantus as a book viz., Nighantu Adarsha, Shaligrama Nighantu, Priya Nighantu, Mahaushadha Nighantu. The Ayurvedic Pharmacopoeia of India, Database on Medicinal Plants Used in Ayurveda, some lesser known herbal drugs of Ayurveda, Indian Medicinal Plant Database, Pharmacognosy of Indigenous Drugs, indexed journals accessed through Google Scholar, PubMed, Scopus, and Web of Science (search till November 2022) were used to find out up-to-date information. Ayush research portal was also accessed in search of this plant.

RESULTS

Pashika plant is mentioned in the verse 204 in the chapter entitled as Viprakirnagana of Ashtanga Nighantu.[5]

Table 1- Description of nomenclature of the plant Pashika

Nomenclature of the plant	Meaning of name
Pashika[5]	One who snares animals or a bird catcher[6]
Paniya[5]	Habitat near water[7]
Bijavrksha[5]	Tree growing from seeds or using seeds for trapping birds [8]
Jivavrksha[4]	Tree is a home of many animals.[9]

Interpretation of nomenclature- This plant grows near water; having many seeds and a bird catcher.

Table 2- Appearance of Pashika in different texts

Vedas[10]	Plant is not mentioned in Vedas.
Samhitas	Plant is not mentioned in Brihatrayi (Caraka Samhita; Sushruta Samhita; Vagbhatta Samhita)[11][12][13][14] and Laghutrayi (Sharangadhara Samhita; Bhavaprakasha Samhita; Madhava Nidana)[15][16]
Saushruta Nighaṇṭu,[17] Paryayaratanmala,[18] Abhidanaratanamala,[19] Dhanvantri Nighaṇṭu,[20] Soḍhala Nighaṇṭu,[21] Kaideva Nighaṇṭu,[22] Hṛdyadipaka Nighantu,[23] Madanpāla Nighaṇṭu,[24] Abhidhanaratanamanjari,[25] Shabadacandrika,[26] Camatkara Nighaṇtu,[27] Dravyagunasangraha,[28] Nighaṇṭuśeṣa,[29] Saraswati Nighaṇtu,[30] Madhava Dravyaguna,[31] Rajavallabha Nighaṇtu,[32] Laghu Nighaṇtu,[33] Sivakosha,[34] Sidhamantra,[35] Sidhasāra Nighaṇṭu,[36] Madnadi Nighaṇtu,[37] Amarakosha,[38] Bhavaprakasha Nighaṇṭu,[39] Priya Nighaṇtu,[40] Nighantu Adarsha,[41] ShaligramaNighantu,[42] Mahaushadha Nighantu,[43]	Not mentioned
Rāja Nighaṇṭu	Beeja Vriksha is synonym of Asana (*Pterocarpus marsupium* Roxb)[44]
The Ayurvedic pharmacopeia of India [45]	Not mentioned
Some lesser known herbal drugs of Ayurveda [46]	Not mentioned
Database on medicinal plants used in Ayurveda[47]	Not mentioned
Indian medicinal plant database[48]	Not mentioned
Pharmacognosy of Indigenous Drugs.[49]	Not mentioned
Ayush research portal[50]	No related article is found.

Ashtanga Nighantu's recommendations are completely related to the plant *Pisonia grandis* R Br, according to key terms discovered while searching the internet for the plant Pashika's synonyms.

Table-3 - Characters of *Pisonia grandis* R Br. are resembling to that of Pashika

Synonym of Pashika	Meaning of Synonym	Characters of *Pisonia grandis* R Br
Pashika	Bird catcher.	*Pisonia grandis* R Br. trees also called "bird-catchers.[51]
Paniya	Habitat near water	Plant is found in tropical habitats, mainly islands in the Caribbean and Indo-Pacific.[51]
Bijavrksha	Tree growing from seeds or using seeds for trapping birds	Long seeds that are produced by the trees.[51]
Jivavrksha	Tree is a home of many birds.	By dispersing aromatic molecules into the air, this tree draws birds. They invite tiny birds to use its branches as nesting sites.[51]

DISCUSSION

The last chapter of Ashtanga Nighantu represents the culture known to its author. However this vocabulary is rich in synonymous description of plants. These mentioned synonyms describe the characteristics of the plant which are helpful for its identification. Pashika is the plant which is mentioned only in this lexicon. Author suggests that this plant grows near water; having many seeds which catches birds.

Literary analysis of Ayurvedic texts written before and after Ashtanga Nighantu shows that this plant is not mentioned in these texts. This is may be due to miscommunication regarding identity of the plant or language interpretation problem between the author and followers of this lexicon. Raja Nighantu has mentioned one synonym Beejavrksha for Asana but Ashtanga Nighantu has mentioned Asana as different

plant, both plants have same synonym due to similar character as numerous seeds. *Pisonia grandis* R Br. are found in tropical habitats, mainly Indo-Pacific. (Table-3) Thus confirms the Paniya synonym mentioned in Ashtanga Nighantu. (Table-1) This tree attracts birds to make nests upon it. (Table-3) resembling the Jivavrksha synonym. (Table-1, Image- 2). The trees produce multi-branched infructescences, each bearing from 12 to over 200 long seeds, covered with thick mucous and tiny hooks. (Table-3) this resembles the Bijavrksha synonym (Table-1, Image-1). The extreme stickiness of the seeds evidently evolved to stick to birds and resist removal, facilitating long-distance dispersal. Birds become entangled in one or more infructescences and depending on where the seeds attach to the bird as few as 2-5 seeds can impair flight. Once entangled and unable to fly the bird will become starved, exhausted and eventually die.(Table-3)[52].This character of Pisonia resembles the name Pashika. (Table-1)

Description of *Pisonia grandis* R Br. is as follows

Botanical name- *Pisonia grandis* R Br. Family- Nyctaginaceae

Synonym- Pisonia morindaefolia R Br. ex Wt. English name- Lettuce tree

Tamil names- Chandi Keerai, Leechai kottai keerai, Nachu Kottai keerai

Habitat- Tropical region such as islands of Indo Pacific Ocean; cultivated in the gardens of Chennai.[53]

Botanical description- This is a evergreen tree. Leaves are ovate oblong to oblong, 15 -20 cm long and 5-7 cm wide, obtuse base and acute tip, long petiole, reticulate venation. Inflorescence is terminal cormbose cyme. Flowers are funnel shaped, greyish. Fruits are five angled, club shaped.[53]

Chemical constituents- The plant gave octacosanol, beta-sitosterol, alpha-spinasterol, beta-sitosterol-beta-D-glucopyranoside, dulcitol and quercetin.[53]

Medicinal uses- It is used as folklore medicine in India as an anti diabetic, anti inflammatory, wound healing, diuretic, analgesic, filariasis, dysentery and rheumatic disorders.[53]

Image -1 *Pisonia grandis* R Br. having many seeds [52]

Image -2 Birds building nests on *Pisonia grandis* R Br. [52]

Image-3 Sticky seeds of *Pisonia grandis* R Br. catching the birds [52]

CONCLUSION

The bird-catching pashika tree grows close to bodies of water. Birds are used as pollinators in it. It captures and even kills birds by sticking their seeds on them. Ashtanga Nighantu contains all of the recommendations. Follower lexicons did not, however, examine this plant. However, the synonyms make it evident that the plant in question is *Pisonia grandis* R Br. This study fills the knowledge gap between traditional documentations and traditional remedies. However, additional research is required to develop such plants.

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