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RESEARCH ARTICLE

KUVALAYA VIS-À-VIS MONOCHORIA VAGINALIS PRESL. AND NYMPHAE STELLATA WILLD.: A REVIEW ON SOURCE IDENTIFICATION.

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Abstract

India has a rich lineage of biological diversity both in terms of flora and fauna. Ayurveda explores such diversity in a sustainable way for the benefit of mankind. The classical literature of Ayurveda describes many important plants with therapeutic values. The main challenge faced by the modern scientific world is establishing the correct botanical identity of the plants mentioned by *Acharyas* in Sanskrit. There may also be regional variations regarding the identity of plants. One such controversial identity is that of *Kuvalaya*. Throughout the Nighantus, *Kuvalaya* is identified as *Nymphaestellata*Willd. but*HortusMalabaricus* and other traditional books of *Kerala*, identify the plant as *Monochoria vaginalis*Presl. In this work, an in depth literature survey was done throughout the Samhithas, Nighantus and traditional books of Kerala for establishing the most probable identity of *Kuvalaya*. It was finally concluded that *Monochoria vaginalis*Presl. may also be considered as the source plant of *Kuvalaya.*

Introduction:-

India has a rich lineage of biological diversity. The development of traditional medical systems was in close association with nature exploring the sustainable utilization of these resources for obtaining optimum benefits. Ayurveda is one such scientific class of medicine having its strong roots with nature. The horizons of Ayurvedic literature spans from Vedas, Samhithas, etc. to the research publications of the present era. One among the authentic books of Ayurveda namely Ashtangahrdaya, amongst many other unique concepts, also describes about potent nootropic supplements for enhancing the brain capacity.

The modern day researches are exploring natural nootropic agents owing to the high cost of synthetic medicines for the same. Despite the popularity, existence and continued use of traditional medicines here is high need for establishing quality standards for the same. An area though relevant but not given due importance is the correct identification of source plant of Sanskrit identity of herbs. Though here are standardized books like Ayurvedic Pharmacopeia of India, there are many lacunaes which need to be filled.

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Kuvalaya is the Sanskrit name of a medicinal plant widely mentioned in the classical textbooks of Ayurveda. *Kuvalaya*is the main ingredient of '*Chathushkuvalayarasayana*' a preparation explained in *AshtangahrdayaUtharasthana* which is claimed to be a potent memory enhancer by *Acharya Vaghbhata*. There are issues regarding the correct identity of the plant *Kuvalaya*.

There is no description available in the Vedas regarding the plant. In the Samhitha period *Acharya Vaghbhata* while describing about *Chathuskuvalayarasayana* in *AshtangahrdayaUtharasthana* has indicated about the use of stem, rhizome, leaf and flower of Neelotpala for its preparation. Arunadatta in the commentary has given the synonym of *Neelotpala* as *Indivara*. In *Ayurvedic Pharmacopeia of India*, Indivara has been identified as *Monochoria vaginalis*Presl. belonging to Pontederiaceae family("Shabdakalpadruma",Vol.2 , 2015 p.157). *HortusMalabaricus* also accepts the identity of Neelotpala as Monochoria vaginalis Presl. which is locally known as *Karimkuvalam* in *Kerala*.(Manilal K.S,Vol.2, 2003 P.167)

No description of the plant *Monochoria vaginalis*Presl. is found in the Nighantus of Ayurveda. *Indivaram* and *Neelotpalam* are the *Sanskrit* names used for *Karimkuvalam* in '*Indian Medicinal Plants*', '*Ashtangahrdayakosam*' and the Sanskrit Malayalam dictionary of *Kanippayyyoor*("Indian Medicinal Plants" Vol4,2007,p.55.). It has been said in *HortusMalabaricus*. It is also known by the name '*Karinkula*', where '*Karim*' means black (possibly referring to the dark blue flowers) and the meaning of '*kula*' is not clear. He has also indicated that the plant occurs in marshy regions in many place of Malabar.

Materials and Methods:-

The study was done by in-depth literature survey of different classical texbooks, Nighantus, Ayurvedic Pharmacopeia of India, HortusMalabaricus, traditional books of Kerala, etc.

Classical Categorisation of Kuvalaya in Samhithas and Nighantus.

The details have been compiled from various books like CharakaSamhitha ('Agnivesha'; 2014.p.34), SusrutaSamhitha ('Susruta'; 2014.p.501-502), DhanwanthariNighantu (Amritpal Singh; 2008.p.157), KaiyyadevaNighantu (P.V Sharma; 2017.p.268), ShodhalaNighantu (Dr. Gyanendrapandey; 2009.p.105), MadanapalaNighantu (J L N Shastry; 2010.p.441), Raj Nighantu (Satish Chandra Sankyadhar; 2012.p.544), BhavaprakashaNighantu (KrishnachandraChunekar; 2013.p.466), Gunaratnamala (Bhavamishra; 2006.p.135), etc.

Table no. 1:-Classical categorization of Kuvalaya in Samhithas and Nighantus

BOOK	GANA/VARGA/DASAIMANI
CharakaSamhitha	Dahaprashamanadasaimani
SusrutaSamhitha	Anjanadigana,Utpaladigana
BhavaprakashaNighantu	Pushpavarga
Raja Nighantu	Karaveeradivarga
ShodhalaNighantu	Karaveeradivarga
Gunaratnamala	Pushpavarga
MadanapalaNighantu	Karpooradivarga
KaiyyadevaNighantu	Oushadhivarga
DhanwantariNighantu	Karaveeradivarga

Paryayanamas of *Kuvalaya* in various *Koshas* and *Nighantus*of *Ayurvedic Literature*

The details have been compiled from various books like *KaiyyadevaNighantu*(K.N)(P.V Sharma; 2017.p.268), *ShodhalaNighantu*(S.N) (Dr. Gyanendrapandey; 2009.p.105), *MadanapalaNighantu*(M.N) (J L N Shastry; 2010.p.441), *Raj Nighantu*(R.N) (Satish Chandra Sankyadhar; 2012.p.544), *BhavaprakashaNighantu*(BHA.PRA) (KrishnachandraChunekar, 2013.p.466), *Gunaratnamala*(G.R) (Bhavamishra; 2006.p.135), etc.

Table no 2:-Table showing synonyms of Kuvalaya as per various Nighantus

Synonyms	K.N	S.N	M.N	R.N	BHA.PRA	G.R
Neelotpalam	✓		✓	✓		
Neelabjam	✓					
Asitopalam	✓					✓
Indeevaram	✓	✓	✓	✓	✓	✓

Kajjalam	✓					
Kolodyam	✓					
Kakakudmalam	✓					
Kudmalam	✓	✓		✓		
Kuvalam	✓	✓				
Tamarasam	✓	✓				
Sougandhikam	✓	✓		✓		
Uthpalam	✓	✓		✓		
Varothpalam	✓	✓				
Karnapooram	✓	✓				
Bhadram			✓			
Sugandham				✓		
Kairavam						✓
Kumudam						✓

Indicates present

Probable Interpretation of Synonyms

Interpretation of synonyms gives an idea regarding the identity of the plant. The probable interpretation of synonyms are:

1. Neelotpalam- Neelavarnamuthapalamithi. (The utpala with blue flowers.)("Shabdakalpadruma", Vol 2. 2015. p.627)
2. Asitotpalam- Asitamuthpalamithi(Neelootpalam)(Flowers which are not white) ("Shabdakalpadruma" 2015, Vol.1.p.153)
3. Indeevaram- Indeelakshmitasyavarampriyam (That which is liked by Goddess Lakshmi)("Shabdakalpadruma" 2015, Vol.1.p.205)
4. Kajjalam- kutsithamjalamyasmathshubhramapijalamsamyogathsvavarnathvamnayatheethiyaavath. (Even clear water will not be able to exhibit its inherent properties due to contact with this plant) ("Shabdakalpadruma" 2015. Vol.2.p.7)
5. Tamarasam- Tamarejalesasthiithi. (That which grows in water) ("Shabdakalpadruma",Vol 2. 2015,p.604)
6. Sougandhikam- Sugandhiasthiasyethi (Having fragrance.)("Shabdakalpadruma" 2015. Vol.5.p.423)
7. Utpalam- Utpalathiithi(That which grows in water)("Shabdakalpadruma" 2015. Vol.1.p.227)
8. Karnapooram- Karnampoorayathialankarathiithi (May be indicating that it is used as an ornament.("Shabdakalpadruma",Vol 2. 2015,p.38)

Useful Part

Root stalk, Leaves, rhizome ("Indian Medicinal Plants" Vol 4, 2007.p.55)

Therapeutic Uses of Kuvalaya

1. Kaiyyadeva describes 'Neelotpalakandha' (rhizome) as good for causing and maintaining conception in women and they are also beneficial in menorrhagia.
2. Acharya Charaka in Rakthapittachikitsa describes as Neelotpala being useful as decoction for Gudagataraktapitta(Agnivesha.,2014.p.34).
3. It is also used as 'AvapeedaNasya' along with other drugs (gairika, shankha, chandana, sitajala) in nasal bleeding according to Acharya Charaka (Agnivesha.,2014.p.34).
4. Neelotpala along with kushta, saindhava macerated in hasthimootra has been said for lepa in Kushtachikitsa by Acharya Charaka (Agnivesha.,2014.p.34).

Discussion:-

The drug has frequently used synonyms like *Kajjalam, Utpalam*, etc. indicating its aquatic habitat. It has synonyms like *Neelotpala, Neelabjam, Asitopala*, etc. indicating its morphology. The drug *Kuvalaya* is found widely throughout the *Brhatrayees* in various contexts. *Neelotpala* and*Indeevara* are its most common synonyms. *Nighantukaras* have given the botanical identity of*Neelotpala* or*Kuvalaya* as *Nymphaestellata*Willd. belonging to Nymphaceae family.

While glancing through the traditional books of Kerala like *Sahasrayogam, Ashtangahrdyam Malayalam commentary by ChepatAchyuthaVarier*etc., the *Neelotpalam* has been taken as a plant locally known as

Karimkuvalam. *Van Rheede'sHortusMalabaricus* attributes the botanical identity of *Neelotpala* to *Monochoria vaginalis* Presl. belonging to the aquatic plant family Pontederiaceae. The same identity has also been accepted by the *Compendium of Indian Medicinal Plants* for *Indeevara*. The synonyms given by the *Nighantukaras*also seems to match with the botanical description of *M.vaginalis* to a larger extent. *M vaginalis* is found throughout India, in ponds and marshes up to 1500m. ("Indian Medicinal Plants" Vol 4, 2007.p.55). It is a herb having a short suberect, spongy rootstock, variable leaves, and flowers with centripetal inflorescence. There are studies proving its antioxidant and anti-inflammatory potential. (Chandran R et al, 2012)(antioxidant and curative effect of its methanolic extract against carbon tetrachloride induced acute liver injury in rats(Latha and Latha, 2018), and its nutritional assessment.(Rahul and Parimelazhagan, 2012).The preliminary field survey also revealed that the plant is abundantly found throughout Kerala especially in the marshy fields during rainy season.

Hence more studies need to be undertaken for establishing the exact identity of *Kuvalaya*. *M.vaginalis* is taken as the source plant of *Kuvalaya* (*Neelotpala*) as described in *Chathushkuvalayarasayana* by *Acharya Vaghbhata* in *AshtangahrdayaUtharasthana*.

Conclusion:-

The identity of the source plant of *Kuvalaya* needs more clarification and studies, as *Monochoria vaginalis*Presl. seems to match with the descriptions available in classical textbooks it may also be taken as a source plan of *Kuvalaya*.

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