IDENTIFIED PLANTS WHICH ARE BELONGS IN INDIGOFERA GENERA IN THOOTHUKUDI DISTRICT, TAMIL NADU, INDIA

Dr. A. Rajesh *1

*1 Assistant Professor, Department of Medicinal Botany, Govt. Siddha Medical College, Tirunelveli, India

DOI: https://doi.org/10.29121/granthaalayah.v8.i11.2020.2455

Article Type: Research Article

Article Citation: Dr. A. Rajesh. (2020). IDENTIFIED PLANTS WHICH ARE BELONGS IN INDIGOFERA GENERA IN THOOTHUKUDI DISTRICT, TAMIL NADU, INDIA. International Journal of Research -GRANTHAALAYAH, 8(11), 287-295. https://doi.org/10.29121/granthaalayah.v8.i11.2020.2455

Received Date: 15 November 2020

Accepted Date: 30 November 2020

Keywords:
Indigofera Genera
Thoothukudi
Fabaceae

ABSTRACT

The Indigofera are frequently shrubs, and some are small trees or herbaceous perennials or annuals. These have pinnate leaves. Racemes of flowers grow in the leaf axils, in hues of red, but there are a few white- and yellow-flowered species. The fruit is a legume pod of varying size and shape. Botanical description schedule as; Kingdom: Plantae, (unranked): Angiosperms, (unranked): Eudicots, (unranked): Rosids, Order: Fabales, Family: Fabaceae, Subfamily: Faboideae, Tribe: Indigofereae, Genus: Indigofera. 1620 plant name records match your search criteria Indigofera. The names found have these generic epithets: as accepted in the plant list online data base. That plants were; Indigofera argentea / I. articulate, Indigofera aspalathoides Vahl. Indigofera enn eaphylla Linn. Indigofera glabra Linn. Indigofera glandulosa Willd. Indigofera linifolia Retz. Indigofera pulchella Roxb. Indigofera tinctoria Linn. Indigofera trifoliata Linn. Indigofera trita Linn. Books mentioned 04 species were not latest updated Plant List Online data base which were; Indigofera caerulea Roxb. Indigofera cordifolia. Indigofera frutescens. Indigofera hirsuta. According to the Results and Discussion this research revealed that, 20 species of Indigofera genera by the evidence of books and 04 species synonyms like updated latest in online data base. However, 16 species available in the Thoothukudi District 16 species available commonly and 04 species were rarely showed in Thoothukudi District by randomly field to all soil types of areas.

1. INTRODUCTION

Species of Indigofera are frequently shrubs, and some are small trees or herbaceous perennials or annuals. Most have pinnate leaves. Racemes of flowers raise in the leaf axils, in hues of red, but there are a few white- and yellow-flowered species. The fruit is a legume pod of changing size and shape. [3]

Indigofera is a diverse genus that has exposed unique features production it an interesting candidate as a potential perennial crop. Specifically, there is varied variation between species with a number of distinctive characteristics. Some examples of this variety include alterations in pericarp thickness, fruit type, and flowering morphology. The unique features it has showed include potential for mixed smallholder systems with at least one other species and a resilience that allows for constant nitrogen update despite varying circumstances.

One example of its sole flowering morphology is an open carpel not often understood elsewhere. In addition, it seems that the organ primordial is often formed at deeper layers than other eudicots. [4] This diversity could have
identified plants which are belongs in Indigofera genera in Thoothukudi District, Tamil Nadu, India

important insinuations on its role in an actual perennial polyculture. For example, different flowering morphologies
could be insincerely selected for in varying directions in order to better fit in dissimilar environmental conditions
and with different populations of other plants.

The categories of fruit formed by different species of Indigofera can also be separated into wide-ranging
categories that over show great difference. The three elementary types of fruit groupings can be divided by their
curvature including straight, slightly curved, and falcate (sickle-shaped). In addition, several of the species as well as
Indigofera microcarpa, Indigofera suffruticosa, and Indigofera enneaphylla have exposed delayed dehiscence
(ripening) of fruits. 

This variation might again permit for artificial selection of the most plentiful and nutritious
fruit types and shapes.

Additional way to categorize Indigofera is by its pericarp thickness. The pericarp (the tissue from the ovary that
surrounds the seeds) can be categorized as type I, type II, and type III with type I having the thinnest pericarp and
smallest layers of sclerenchymatous (stiff) tissue and type III having the thickest pericarp and most
sclerenchymatous layers. Despite the previous examples of delayed dehiscence, most fruits of this genus show
normal irascible dehiscence to disperse seeds. Similar to fruit shape, the variation in fruit sizes allows for the
thickest and most bountiful fruits to be selected.

**Botanical classification**

Kingdom: Plantae
(unranked): Angiosperms
(unranked): Eudicots
(unranked): Rosids
Order: Fabales
Family: Fabaceae
Subfamily: Faboideae
 Tribe: Indigofereae
Genus: Indigofera

**Benefits: Indigo dye**

Numerous species, especially Indigofera tinctoria and Indigofera suffruticosa, are used to yield the dye indigo.
Scraps of Indigo-dyed fabric likely dyed with plants from the genus Indigofera discovered at Huaca Prieta predate
Egyptian indigo-dyed fabrics by more than 1,500 years. 

Colonial planters in the Caribbean grew indigo and
relocated its cultivation when they firm in the colony of South Carolina and North Carolina where people of the
Tuscarora confederacy assumed the dyeing procedure for head wraps and clothing. Exports of the crop did not rise
until the mid-to late 18th century. When Eliza Lucas Pinckney and enslaved Africans successfully cultivated new
strains near Charleston it turn into the second most important cash crop in the colony (after rice) before the
American Revolution. It covered more than one-third of all exports in value.

The chemical aniline, from which many important dyes are derivative, was first synthesized from Indigofera
suffruticosa (syn. Indigofera anil, whence the name aniline).

In Indonesia, the Sundanese use Indigofera tinctoria (known locally as tarum or nila) as dye for batik. Marco
Polo was the first to account on the preparation of indigo in India. Indigo was fairly frequently used in European
easel painting during the Middle Ages.

**Medicinal uses**

More than a few species of this collection are used to alleviate pain. The herbs are commonly stared as an
analgesic with anti-inflammatory activity, rather than an anodyne. 

Indigofera articulata (Khedaish in Arabic) was used for toothache, and Indigofera oblongifolia (hasr in Arabic) was used as an anti-inflammatory for insect
stings, snakebites, and swellings.

Indigofera suffruticosa and Indigofera aspalthoides have also been utilized as anti-inflammatories. 

A obvious was granted for use of Indigofera arrecta extract to dismiss ulcer pain.

The Maasai people of Kenya use parts of Indigofera brevicalyx and Indigofera swaziensis as tooth brushes.
2. MATERIALS AND METHODS

Research type: plant survey research

Research design: selected areas and field visit to collected samples and identified the particular genera species respectively and made digital photography of the identified plants. Data compare with available botany taxonomical printed book and www.the plant list.com in electronic media with schedule the plants as result then data generated to conclusion.

3. RESULTS

| BOTANICAL NAME                  | Tamil name                | REFERENCE                                      |
|---------------------------------|---------------------------|------------------------------------------------|
| Indigofera angustifolia         |                           | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera anil Linn.           | shimaiya-veri             | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera argentea / I. articulata | kat-averi / aramurai, iruppumuri | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera aspalathoides Vahl.  | shivanarvembu             | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera caerulea Roxb.       |                           | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera cordifolia.          |                           | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera enneaphylla Linn.    | cheppu neringie, adampedi | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera frutescens.          |                           | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera galegooides DC.      |                           | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera glabra Linn.         |                           | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera glandulosa Willd.    | barapatam                 | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera hirsuta.             |                           | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera indica Gaertn.       |                           | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera linifolia Retz.      | rathna maalai             | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera paucifolia Delile    | kauuttukkar chammathi     | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera pulchella Roxb.      | narinji                   | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera tinctoria Linn.      | averi                     | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera trifoliata Linn.     |                           | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera trita Linn           | kandaram, punalmurungai, saubanjam | Indian materia medica, volume two, 3rd edition, 1954 |
| Indigofera oblongifolia Forsk    | kauuttukkar chammathi     | Indian Medicinal Plants, vol-1, second edition, 2012, Periodical expert book agency, delhi. |
| BOTANICAL NAME                  | PICTURES |
|--------------------------------|---------|
| *Indigofera angustifolia*      | ![Image](image1.png) |
| *Indigofera anil Linn.*        | ![Image](image2.png) |
| *Indigofera argentea / I. articulata* | ![Image](image3.png) |
| *Indigofera aspalathoides Vahl.* | ![Image](image4.png) |
Dr. A. Rajesh

Indigofera enneaphylla Linn.

Indigofera galegoides DC.

Indigofera glabra Linn.

Indigofera glandulosa Willd.
Identified plants which are belongs in Indigofera genera in Thoothukudi District, Tamil Nadu, India

*Indigofera indica* Gaertn.

*Indigofera linifolia* Retz.

*Indigofera paucifolia* Delile

*Indigofera pulchella* Roxb.
Indigofera tinctoria Linn.

Indigofera trifoliata Linn.

Indigofera trita Linn

Indigofera oblongifolia Forsk
4. DISCUSSION

The Indigofera are mostly shrubs, though some are small trees or herbaceous perennials or annuals. Botanical description schedule as: Kingdom: Plantae, (unranked): Angiosperms, (unranked): Eudicots, (unranked): Rosids, Order: Fabales, Family: Fabaceae, Subfamily: Faboideae, Tribe: Indigofereae, Genus: Indigofera. According to the result; 20 species identified in Thoothukudi district among 20 species mentioned in two text books such as; Indian Materia Medica, volume two, 3rd edition, 1954 and Indian Medicinal Plants, vol-1, second edition, 2012, Periodical expert book agency, Delhi. That plants were; Indigofera argentea / I. articulate, Indigofera aspalathoides Vahl. Indigofera enneaphylla Linn. Indigofera glabra Linn. Indigofera glandulosa Willd. Indigofera linifolia Retz. Indigofera pulchella Roxb. Indigofera tinctoria Linn. Indigofera trifoliata Linn. Indigofera trita Linn.

Books mentioned 04 species were not latest updated Plant List Online data base which were; Indigofera caerulea Indigofera cordifolia, Indigofera frutescens, Indigofera hirsuta.

5. CONCLUSION

According to the Results and Discussion this research revealed that, 20 species of Indigofera genera by the evidence of books and 04 species synonyms like updated latest in online data base. However, 16 species available in the Thoothukudi District 16 species available commonly and 04 species were rarely showed in Thoothukudi District by randomly field to all soil types of areas.

SOURCES OF FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

CONFLICT OF INTEREST

The author have declared that no competing interests exist.

ACKNOWLEDGMENT

I express my thanks to head of the Medicinal Botany Department, Govt. Siddha Medical College, Tirunelveli. And my colleagues from various colleges to help this whole research work.

REFERENCES

[1] Schrire BD, Lavin M, Barker NP, Forest F. (2009). "Phylogeny of the tribe Indigofereae (Leguminosae-Papilionoideae): Geographically structured more in succulent-rich and temperate settings than in grass-rich environments". Am J Bot. 96 (4): 816–52. doi:10.3732/ajb.0800185. PMID 21628237.
[2] Schrire BD. (2008). "The Madagascan genus Vaughania is reduced to synonymy under Indigofera (Leguminosae–Papilionoideae–Indigofereae)". Kew Bulletin. 63 (3): 477–479. doi:10.1007/s12225-008-9061-7. JSTOR 20649585.
[3] Gao X, Schrire BD. "Indigofera L." Flora of China. eFloras (Missouri Botanical Garden, St. Louis, MO & Harvard University Herbaria, Cambridge, MA). Retrieved 12 February 2017.
[4] Paulino J, Groppo M, Teixeira S. (2011). "Floral developmental morphology of three Indigofera species (Leguminosae) and its systematic significance within Papilionoideae". Plant Systematics and Evolution. 292 (3): 165–176. doi:10.1007/s00606-010-0405-z.
[5] Leite V, Marquiafável F, Moraes D, Teixeira S. (2009). "Fruit anatomy of Neotropical species of Indigofera (Leguminosae, Papilionoideae) with functional and taxonomic implications". The Journal of the Torrey Botanical Society. 136 (2): 203–211. doi:10.3159/08-RA-106.1.
Chauhan V, Pandey A. (2014). "Structure and evolution of the pod in Indigofera (Fabaceae) reveals a trend towards small thin indehiscent pods". Botanical Journal of the Linnean Society. 176 (2): 260–276. doi:10.1111/boj.12203.

Splitstoser JC, Wouters J, Claro A. (2016). "Early pre-Hispanic use of indigo blue in Peru". Science Advances. 2 (9). American Association for the Advancement of Science.

Douma M.. "Pigments through the Ages—History—Indigo". Pigments through the Ages.

Buchanan R. (1999). A Weaver's Garden: Growing Plants for Natural Dyes and Fibers. Courier Corporation. p. 106. ISBN 978-0-486-40712-8. Retrieved 12 May 2016.

Anonymous, "Tico Ethnobotanical Dictionary". Archived from the original on 3 June 2007. Retrieved 16 June 2007.

Anonymous, "(syllabus: Duke University)". Archived from the original on 2015-09-24.

Bhaskar AE, Ganga N, Arivudaimbi R, Santhanum G. (1982). "Anti-inflammatory, analgesic activities of Indigofera aspalthoides". Indian J Med. 76: 115–16.

Leite SP, Silva LLS, Catanho MTJA, Lima EO, Lima VLM. (2003). "Anti-inflammatory activity of Indigofera suffruticosa extract". Rebrasla. 7: 47–52.

Leite SP, Vieira JR, de Medeiros PL, Leite RM, de Menezes Lima VL, Xavier HS, de Oliveira Lima E. (2006). "Antimicrobial Activity of Indigofera suffruticosa". Evid Based Complement Alternat Med. 3 (2): 261–265. doi:10.1093/ecam/nel010. PMC 1475935. PMID 16786057.

Anonymous, "Phytodrug for management of peptic ulcer and methods of preparing and using same."

Bussmann RW, Gilbreath GG, Solio J, Luturua M, Lutuluo R, Kunguru K, Wood N, Mathenge SG. (2006). "Plant use of the Maasai of Sekenani Valley, Maasai Mara, Kenya". J Ethnobiol Ethnomed. 2: 22. doi:10.1186/1746-4269-2-22. PMC 1475560. PMID 16674830.

Anonymous, "ILDIS Legume Web entry for Indigofera". International Legume Database & Information Service. Cardiff School of Computer Science & Informatics. Retrieved 12 February 2017.

Anonymous, USDA, ARS, National Genetic Resources Program. "GRIN species records of Indigofera". Germplasm Resources Information Network—(GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. Retrieved 12 February 2017.

Anonymous, "The Plant List entry for Indigofera". The Plant List. Royal Botanic Gardens, Kew and the Missouri Botanical Garden. 2013. Retrieved 12 February 2017.

Anonymous, "English Names for Korean Native Plants (PDF). Pocheon: Korea National Arboretum. 2015. p. 497. ISBN 978-89-97450-98-5. Archived from the original (PDF) on 25 May 2017. Retrieved 19 December 2016 – via Korea Forest Service.

Kumar P. (2012). Indigo Plantations and Science in Colonial India. Cambridge University Press. p. 350. ISBN 978-1-107-02325-3.

Anonymous, Indigofera. eFloras Lists.

Dressler, S.; Schmidt, M. & Zizka, G. (2014). "Indigofera". African plants – a Photo Guide. Frankfurt/Main: Forschungsinstitut Senckenberg.

Nadkarni, indian materia medica, volume two, 3rd edition, 1954

Krithikar and basu, Indian Medicinal Plants, vol-1, second edition, 2012, Periodical expert book agency, Delhi.