



## **Anti-Hepatotoxic Effect of Vananimbuka (*Glycosmis pentaphylla* Retz.)**

**Shyny Thankachan<sup>1\*</sup>, Vishnu Damodar<sup>1</sup> and Bhagavan G. Kulkarni<sup>2</sup>**

<sup>1</sup>Department of Rachana Shareera, Parul University, Vadodhara, Gujarat, India.

<sup>2</sup>Department of Rachana Shareera, Parul Institute of Ayurved & Research, Vadodhara, Gujarat, India.

### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

### **Article Information**

DOI: 10.9734/JPRI/2021/v33i40A32249

#### Editor(s):

(1) Sawadogo Wantinga Richard, Ministry of Higher Education, Scientific Research and Innovation, Burkina Faso.

#### Reviewers:

(1) Abdul Nazer Ali, AIMST University, Malaysia.

(2) Balaji Deekshitulu P V, Sri Balaji Clinic, India.

(3) Kirti Rajendra Bhati, Bharati Vidyapeeth University, India.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/72205>

**Mini-review Article**

**Received 01 June 2021**

**Accepted 02 August 2021**

**Published 07 August 2021**

### **ABSTRACT**

Liver, one of the largest of organs and a chief site for intense metabolism and excretion. It has a surprising role in the maintenance, performance and regulating homeostasis of the body. The major functions of liver are carbohydrate, protein, and fat metabolism, detoxification, secretion of bile and storage of vitamin. Maintaining a healthy liver is a crucial factor for overall health and well-being. But it is continuously and frequently exposed to environmental toxins, abused by poor food habits and alcohol. Prescribed and over-the-counter drugs can eventually lead to various liver ailments like hepatitis and liver cirrhosis. Thus liver diseases are some of the fatal health issues in the world today. According to Ayurveda, Yakrut is considered as one of the 15 koshtangas. It is also considered as sthana of ranjaka pitta and plays an important role in maintenance of agni. Hepatic disorders can be compared to yakrut vikaras and yakrutpleeha vikaras. In ayurveda Vananimbuka discription is available for yakrut vikara.

**Keywords:** Ayurveda; Vananimbuka; yakrut vikara; ethnobotany; Antihepatic; Hepatoprotective.

\*Corresponding author: E-mail: drshynyayur@gmail.com;

## 1. INTRODUCTION

Liver is considered as a seat of Ranjakapitta, Moola of Raktavaha srotas and Raktadhara kala, Ranjaka pitta acts on the rasa when it reaches Yakrit and Pleeha converting it into Rakta dhatu and Pitta will be formed as Rakta mala. Yakrit rogas is one of the major diseases and it includes Yakrit shotha, Pandu, Kaamala, Kumbakamala, Haleemaka, Raktapitta etc. The Nidana, Samprapti, Lakshana, Chikitsa are similar to that of Pleeha roga. The profound knowledge of herbal remedies in traditional cultures are developed through trial and error over many centuries, and that the most important cures were carefully passed on verbally from one generation to another. People who use traditional remedies may not understand the scientific rationale behind their medicines, but they know from personal experience that some medicinal plants can be highly effective if used at therapeutic doses. Since we have a better understanding today of how the body functions, we are thus in a better position to understand the healing powers of plants and their potential for multi-functional chemical entities for treating complicated health conditions. Medicinal plants typically contain mixtures of different chemical compounds that may act individually, additively or in synergy to improve health. Modern medicines have little to offer for alleviation of hepatic diseases and it is chiefly the herbal preparations which are employed for the treatment. In the lack of any effective remedy for severe hepatic disorders, management by herbal plants plays a vital role.

## 2. EXPLANATION OF PLANT [1]

Habit: Erect shrub or small tree.

Leaves: Alternate, stipulate, pinnately compound, 3-7 foliolate;



Fig. 1. Vananimbhuka plant



Fig. 2. Fruit



Fig. 3. Flower

leaflets – subsessile, alternate or sub-opposite, oblong–lanceolate, entire or crenulate; apex – obtuse, acute or acuminate: Base- acute, Glabrous.

Flowers: Small, Crowded in small clusters on the peduncle branches, shortly pedicelled, bract beneath the calyx, triangular.

Fruit: Berry, 1cm across, Globose, Apiculate, pinkish-white or cream coloured.

## 3. CHEMICAL CONSTITUENTS: [2]

**Root:** contains Dictaminine,  $\gamma$ -fagarine, skimmianine,  $\beta$ -sitosterol, coumarin, stigmaterol, myricyl alcohol, base glyborine, triterpenes – arborinol-A, arborinol-B, arborine, arborinine, carbazole alkaloid - glycozolinol, glycozolicine, 3-formylcarbazole and glycosinine, glycozolidol

**Root bark:** contains Acridone alkaloids – Noracronycine, demethylacronycine and de-N-methylnoracronycine, quinozoline alkaloid – glycophyminine, glycosolone, glycolone, amide – glycomide.

**Leaves:** contain quinolone alkaloid – glycolone

**Flowers:** contains alkaloids and an amide; alkaloids - arborine, arborinine, skimmianine, glycorine, glycosmicine, benzamide.

### 3.1 Pharmacological Actions: [3]

- Hepato-protective activity
- Anti-tumour activity
- Insecticidal and larvicidal activity
- Anti-inflammatory activity
- Expectorant
- Anti-oxidant
- Anthelmintic.

### 3.2 General Uses: [4]

- Juice of leaves are used in fever and liver complaints.
- Leaves are considered as a good antidote for eczema and other skin troubles, applied in the form of paste.
- The roots are good for facial inflammations, rheumatism, jaundice and anaemia.
- The leaves are useful in helminthiasis, wounds and erysipelas.

### 3.3 Ethnobotanical and Folk uses: [5]

- Glycosmis pentaphylla is taken to treat bilious attacks.
- A decoction of roots and leaves is taken for intestinal trouble.
- In Vietnamese folk medicine, the leaves are considered appetitive, stomachic and an infusion of roasted leaves is prescribed for women after delivery as an appetizer.
- An infusion of leaves and roots is given after childbirth as a protective medicine.
- Bitter juice of leaves used for fevers, liver complaints and intestinal worms, especially in children.
- Stems and roots of plant used for ulcers.
- Paste of leaves, with a bit of ginger, applied to eczema and other skin diseases, also applied over the navel for worms and other bowel disorders.

### 3.4 Uses in Other System of Medicine: [6]

**Siddha:** The bark is astringent, febrifuge and is indicated in anorexia, burning sensation in eyes and rheumatism.

## 4. ANTIHEPATIC ACTIVITY OF VANANIM-BHUKA [7-12]

Vananimbhuka possess Tikta rasa. Tikta rasa reduces the excessive drava guna of Pitta. In addition to this tikta rasa has its inherent Pitta shamaka property. Hence acts against vitiated pitta. The drug also by its rechana action suppresses the vitiated pitta dosha. Because of its Kasaya rasa, Ushna veerya and katu vipaka, it show the actions of kapha shamaka. On the other hand it counteracts Vata with Ushna veerya. Hence Vananimbhuka acts as a Tridoshaghna with specific effect of Pitta shamana. Tikta rasa, tikshna guna, Katu vipaka and Ushna veerya stimulates the Agni and helps in the process of digestion. Because of their Agni vriddhikara property, they increase digestive

power and digests amarasa due to their Deepana, Pachana action. Due to its Ushna veerya it removes srotorodha. The additive effect of the drug with predominance of tikta rasa also acts on rakta dhatu by bestowing the property of rakta sodhaka which is the prime function of hepato-biliary system. Thus vananimbhuka acts on Yakrit rogas and minimize the process of pathogenesis.

## 5. CONCLUSION

Intake of vidahi and abhishyandi ahara habitually for long periods brings about great vitiation of Rakta and Kapha and produces diseases of the liver. Along with the above aetiology, factors which are responsible for the vitiation of Rakta and Pitta are also causative factors in the origin of Yakrit rogas. Most of the signs and symptoms told in the classics are similar to the signs and symptoms of liver diseases. The main aetiological factor considered for the origin of the disease is "Mandagni" in our shastra. Yakrit is one of the koshtangas which is also a seat for the Ranjaka pitta, Moola of Raktavaha srotas and Raktadhara kala. A lot of reference regarding yakrit rogas is found in the classics. The basic principles of Ayurvedic pharmacology are capable enough to explain the mode of action in scientific way. Pharmacology of Ayurveda is based on the theory of Rasa, Guna, Veerya, Vipaka and Prabhava which were the simplest parameters in those days to ascertain the action of drug on body. Vananimbhuka help to prevent the slightly damaged liver to further advanced pathetic stages, hence the drug consider as a hepato protective drug.

## CONSENT

It is not applicable.

## ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Sharma PV. Dravya Guna Vijnana, Chaukhambha Bharati Academy, Varanasi, Reprint. 1999;IV:40-43.

2. Yogamarasimhan SN - Medicinal Plants of India, Tamilnadu, Banglore, Cyber Media. 2000;2:248.
3. Sharma PV. Dravya Guna Vijnana, Chaukhambha Bharati Academy, Varanasi, Reprint. 1999;IV:42.
4. Sharma PV. Dravya Guna Vijnana, Chaukhambha Bharati Academy, Varanasi, Reprint. 1999;IV:43.
5. Gamble JS. Flora of the Presidency of Madras, Published under the authority of the Secretary of state for India in Council, London. 1921;I:153.
6. Gamble JS. Flora of The Presidency of Madras, Published under the authority of the Secretary of state for India in Council, London. 1921;I-IV:157.
7. Varier PS. Indian Medicinal Plants, a Compendium Of 500species, Arya vaidya Shaala, Kottakkal, Orient Longman Ltd, Reprint. 1996;III:327-332.
8. Sharma PV. Classical uses of medicinal plants, Chaukhambha Vishva Bharati, Varanasi, 1st edition. 1996;78.
9. Kirtikar KR, Basu BD. Indian medicinal plant, Published by International Book Distributors, Dehradun, 2nd edition. 1999;I:478.
10. Nadkarni KM. Indian materia medica, Popular Prakashan Private Ltd, Bombay, Reprinted edition. 2009;I:742.
11. Bhavamishra. Bhavaprakasha Nighantu, Commentary by Dr. K. C. Chunekar, Edited by Dr. G. S. Pandey, Chaukhambha Bharati Academy, Varanasi; 2006.
12. Dr. JLN Shastri. Ayurvedokta Oushada Mala, Chaukhambhaorientalia, Varanasi, 1st edition. 2001;25

© 2021 Thankachan et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Peer-review history:*  
*The peer review history for this paper can be accessed here:*  
<https://www.sdiarticle4.com/review-history/72205>