



Role Of Sharpunkha In Hepatotoxicity: A Review

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ABSTRACT

Liver is an important organ concerned with the biochemical activities in the human body. It has a great capacity to detoxicate toxic substances and synthesize useful principles. Therefore, damage to the liver inflicted by a hepatotoxic agent is of grave consequences. There is an ever increasing need of an agent that could prevent such damage. Because of severe undesirable side effect of synthetic agents, there is growing focus to follow systematic research methodology and to evaluate the scientific basis for the traditional herbal medicines which are claimed to possess hepatoprotective activity. Tephrosia purpurea plant commonly known in sanskrit as sharpunkha is a highly branched, sub-erect, herbaceous perennial herb. In Ayurvedic literature, this plant has also given the name of “Sarwa wranvishapak” which means that it has the property of healing all types of wounds. It is an important component of some preparations such as “Tephroli” and “Yakrifit” used for liver disorders. The roots and seeds are reported to have insecticidal and piscicidal properties and are also used as a vermifuge. The roots are also reported to be effective in leprosy wound and their juice, to the eruption on the skin.

Keywords- Hepatotoxicity, Sharpunkha, liver disorder

INTRODUCTION

The liver is the dynamic organ of overriding significance intricate inside the protection of metabolic purposes and detoxing from exogenous and endogenous challenges, such as xenobiotic drugs, viral infections and continual alcoholism. If at some point of all such exposures to the above referred to challenges, the herbal defensive mechanism of the liver is overpowered, the end result is hepatic damage. Liver damage is always related to cell necrosis, increase in tissue lipid peroxidation, and depletion in the tissue glutathione tiers. In addition, serum levels of many biochemical markers such as serum glutamate oxaloacetate transaminase (SGOT), serum glutamate pyruvate transaminase (SGPT), triglycerides, cholesterol, bilirubin and alkaline phosphatase (ALP) are raised^[1]. Significant advances in drug research notwithstanding effective pharmacological strategies are not available to counter deteriorating liver function that occurs as result of exposure to drugs and other environmental poisons. Indigenous system of medicine have a strong repository of products that have been used traditionally to offer some sort of liver protection^[2] Ayurveda, the ancient system of Indian medicine identified liver diseases quite early and recommended a number of herbal remedies. One such herb Sarapunkha (*Tephrosia purpurea*) is considered useful in bilious febrile attack, obstruction of liver and spleen.^[3]

Sharpunkha has the great medicinal important in Ayurveda. It is a well known Ayurvedic herb, used in the treatment of liver cirrhosis and splenomegaly. This herb is very beneficial to maintain the healthy hemoglobin levels in body. In Ayurveda Sharpunkha has been identified as the fruitful herb for liver health. Besides this, the herb is good for digestive disorders. This is good herb in cough and respiratory complications. Furthermore this herb is loaded with diabetic and anti –hyper lipidemic properties. There are various photochemical compounds present in this herb like lupeol, Rutin, Delphindin chloride, palmitic , caffeic acid, palmitoleic, Tepurindiol, Linoleic acid, olein acid, valine, Threonine, Lysine, Isoleucine, Karanjin, Phenylalanine, Tephron. All these phytochemical compounds are packed with amazing properties to resolve the various health issues.

CLASSIFICATION^[4]

Kingdom-Plantae

Sub kingdom-Tracheobionta

Super division-Spermatophyta

Division- Magnoliophyta

Class-Magnoliopsida

Subclass-Rosidae

Order-Fabales

Family-Fabaceae

Sub Family-Papilionaceae

Genus- Tephrosia

Species-purpurea

Sharpunkha Latin names-Tephrosia Purpurea

Sharpunkha Sanskrit name- Pleehashatru, Neelavrukshakruti, Shimbiphala, Mahaushadhi,

Sharapunkha.

CHEMICAL COMPOSITION

Tephrosia purpurea (wild indigo) contains various chemical compounds, including alkaloids, flavonoids, terpenoids and phenolic compounds^[5]. Here are some of the major chemical compounds reported in Tephrosia purpurea^[6].

1. **Rotenoids:** Tephrosin, rotenone, sumatrol and others. Rotenoids are a class of compounds known for their insecticidal and pesticidal properties.
2. **Alkaloids:** Purpurin, purpureine, tephrosinamine, and others. Alkaloids are a diverse group of nitrogen-containing compounds with potential pharmacological activities.
3. **Flavonoids:** Genistein, apigenin, kaempferol, quercetin, and others. Flavonoids are plant pigments known for their antioxidant and anti-inflammatory properties.
4. **Phenolic compounds:** Gallic acid, ellagic acid, and others. Phenolic compounds possess antioxidant and antimicrobial activities.
5. **Terpenoids:** Beta-sitosterol, stigmasterol, and others. Terpenoids are a large class of compounds with diverse biological activities.

AYURVEDIC PROPERTIES OF SHARPUNKHA^[7]

Rasa	Tikta, Kashaya
Guna	Laghu, Rooksha, Teekshna
Virya	Ushna
Vipaka	Katu

SHARPUNKHA EFFECTS ON DOSHAS

It balances the vata and kapha doshas.

ANCIENT VERSE ABOUT SHARPUNKHA-TEPHROSIA PURPUREA^[8]

Sharpunkha, Pleehashatru and Neelivrikshakriti are the different names of Sharpunkha. It is bitter and astringent in taste. Its properties are light. It is good for liver spleen disorders, wounds, toxins, cough, fever and blood disorders.

PRACTICAL USES OF TEPHROSIA PURPUREA^[9]

- This is known to be an effective herb for the treatment of liver cirrhosis. It helps in the regeneration of new liver cells. The herb also provides relief in the symptoms like nose bleeding, weight loss, decreased appetite, jaundice, anorexia, itchy skin, weakness, abdominal swelling and swelling of legs. Hence, it is an effective herb for the treatment of liver disorders.
- Use of this herb is quite good to manage the splenomegaly. It helps in production of blood cells. This herb also manages the symptoms like anemia, fatigue, easy bleeding, fullness of stomach and pain in upper abdomen which are associated with splenomegaly.
- This herb is packed with kidney protective properties. It helps to strengthen the kidney system and aids in the removal of waste material from the body.
- The herb is quite beneficial in the treatment of skin diseases. Insecticidal properties of the herb are used for treating the skin eruptions. Leaves of this herb contain rotenoid, which acts as an insecticide. Whereas seeds contain a flavonoid, lanceolarin B, which helps in healing of skin. Hence use of this herb is quite good in the treatment of various skin diseases like eczema, scabies and leprosy.
- Anti-diabetic properties of this herb help to maintain the healthy blood sugar levels. Moreover, this herb also helps to manage the symptoms of diabetes like increased urination, fatigue, weight loss, excessive thirst, blurred vision and slow healing of the wounds.
- Antipyretic and analgesic properties of this herb are good in the treatment of fever.
- This herb is also loaded with anti-inflammatory properties which help to reduce bodyache.
- Antimicrobial activities of the herb are quite beneficial to manage the several viral, bacterial and fungal infections.
- It is known to be a beneficial herb for the treatment of female reproductive health issues. Use of this herb is quite effective in the treatment of uterine fibroids, ovarian cysts and PCOS etc. This herb helps to reduce the size of cyst and any outgrowth in the uterus.

- Anticancer properties of this herb help in treatment of cancer. This herb helps to stop the growth of cancer cells and increases the growth of healthy cells in a natural way without causing any side effects on health.
- Use of this herb is quite good to resolve the digestive disorders. It helps to provide relief in the indigestion, heart burn, intestine pain and acidity etc.

PARTS USED

Root

Whole plant

DOSAGE

3-6 gm powder and 10-12 ml juice.

Hepatoprotective Activity of Tephrosia purpurea

Tephrosia purpurea has been studied for its hepatoprotective activity, which refers to its ability to protect the liver from various insults and promote liver health. Here is a detailed overview of the antihepatotoxic activity of Tephrosia purpurea.

- Protection of Liver from Oxidative stress:** Tephrosia purpurea exhibits potent antioxidant activity, which helps protect the liver from oxidative stress and damage^[10]. The plant's bioactive compounds, such as flavonoids and phenolic compounds, scavenge free radicals and reduce lipid peroxidation, thereby preventing cellular damage and maintaining liver function.
- Detoxification and Anti-inflammatory effects:** Tephrosia purpurea has been found to possess detoxifying properties, assisting in the elimination of toxins from the liver. Additionally, it exhibits anti-inflammatory effects, reducing inflammation in the liver. These actions contribute to the hepatoprotective activity of Tephrosia purpurea.
- Modulation of Liver Enzymes:** Tephrosia purpurea extract have been shown to regulate liver enzymes, including alanine transaminase (ALT), aspartate transaminase (AST), and alkaline phosphatase (ALP)^[11]. Abnormal levels of these enzymes are indicative of liver damage, and the modulation of their activity suggests the protective effect of Tephrosia purpurea on liver function.
- Restoration of Liver Function :** Tephrosia purpurea has shown the potential to restore liver function by promoting the regeneration of hepatocytes^[12] and improving liver metabolism. It aids in the recovery of liver damage and contribute to overall liver health.

E] **Antifibrotic Effects:** Tephrosia purpurea has demonstrated antifibrotic properties, which help prevent the formation and progression of liver fibrosis^[13]. It inhibits the activation of hepatic stellate cells and reduces collagen deposition in the liver, thereby protecting against fibrosis.

CONCLUSION

Tephrosia purpurea (wild indigo) exhibits a diverse range of pharmacological activities, making it a plant of significant interest. Studies have demonstrated its anti-inflammatory, antioxidant, hepatoprotective, anti-diabetic, and antimicrobial properties. The plant's bioactive compounds, including flavonoids, rotenoids, alkaloids and phenolic compounds, contribute to its therapeutic potential. Its hepatoprotective activity aids in liver detoxification, promotes liver function, and mitigates liver damage. It is important to note that further research, including clinical trials, is required to fully establish its efficacy and safety in humans. Additionally, it is crucial to consult healthcare professionals for appropriate guidance and treatment options regarding the use of Tephrosia purpurea for specific conditions.

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