

Sharpunkha (*Tephrosia Purpurea*) and Tuba Root(*Derris elliptica*) as alternative medicines for innumerable diseases and disorders in Ayurveda – A Review

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ABSTRACT

Herbal medicines have always been preferred for the treatment of many diseases due to least side effects. Sharpunkha (*Tephrosia Purpurea*) and Tuba Root (*Derris elliptica*) have been used in Ayurvedic medicines from hundreds of years. It has been found that *Tephrosia* is very effective in viral hepatitis, protein malnutrition, liver damage, UTI infections etc. Similarly fruits or sprouts of *Derris* is used in the treatment of skin ailments and its leaves are useful in treating cold, cough, diarrhea, dyspepsia, gonorrhea, leprosy etc. Present study has been done to find out the various medical uses like antibacterial activity, hepatoprotective drugs, antifungal activity of *Derris elliptica* and anti-microbial activity of *Tephrosia purpurea*. Ethanolic extract of Sharpunkha is known to possess flavonoids, alkaloids, terpenoids, saponins, tannins and phenols which either individually or in combination exert antimicrobial activity but its aqueous extract could not show the much desired activity. It has been tried to review the use of Sharpunkha and *Derris elliptica* as medicines in Ayurveda.

I. INTRODUCTION

Sharpunkha is a self generating perennial herb found in all over India. It can be found as an ingredient in traditional herbal formulations. Whole plant may be used for its rich flavonoid and polyphenol content. It is an important ingredient of liver tonics. This article tries to review the literatures on the plant and highlight its various medical uses.

The constituents of Sharpunkha include alkaloids, saponins, glycosides, Tannins, flavonoids etc. Some of the constituents may reduce toxicity or stimulate the action through a synergistic activity. Herbals like Sharpunkha can be useful in many chronic degenerative or mild to moderate functional ailments, can also have an important role to play in recovery from serious illness reducing the recovery time. Allopathic medicine and herbal drugs working in concert offer the virtues of both the systems and patients is the beneficiary of this relationship.

Sharpunkha containing formulations are prescribed in Ayurveda mainly as liver correctives and restoratives. They contain aqueous or alcoholic extracts of *Sharpunkha*. They are found to be effective in treating various disorders like

1. Viral hepatitis
2. Pre-cirrhotic conditions
3. Protein energy malnutrition
4. Radiation and chemotherapy induced liver damage
5. As an adjuvant with hepatotoxic drugs like antitubercular drugs
6. Urinary tract anti-infective
7. Antibacterial in acne Vulgaris and acts as a blood purifier

Though *Sharpunkha* is just one of the many ingredients of these formulations, it supports the effects of other herbs and produces a synergistic effect that initiates the effect of the final product. Mathews *et al.* 20128 studied the volume of work in the preclinical studies on the various other therapeutic aspects of the plant drug and found that it is not translated into useful products though there are many articles that confirm the results of different studies. More studies have to be directed towards generating data regarding the pharmacodynamic and pharmacokinetic aspects of the drug.

Sharpunkha pers. (leguminosae), is a wild plant known as 'Sarapunkha' in Sanskrit and 'Purple tephrosia' or Wild indigo in English. *Sharpunkha* has been used for centuries in the Indian traditional medicine, for the treatment of various inflammatory disorders. It is considered beneficial for liver, spleen and kidney disorders. Also it has the property to cure all types of wounds (Joshi, S.G., 2000).

According to Ayurveda literature this plant has also given the name of Wranvishapaka which means that it has the property of healing all types of wounds (Kritikar, K. R. & Basu B. D., 1956). In Ayurveda system of medicine various parts of this plant are used as remedy for impotency, asthma, diarrhea, gonorrhea, rheumatism, ulcer and urinary disorders. The plant has been claimed to cure diseases of kidney, liver spleen, heart and blood (Upadhyay, Y. N., et. al. 1964). The roots and seeds are reported to have insecticidal and piscicidal properties and also used as vermifuge. The roots are also reported to be effective in leprous wound and their juice is applied to the eruption on skin. Its aerial parts and roots are used in bronchial asthma, hepatic ailments, cutaneous toxicities, pain and inflammation (Upadhyay, Y. N., et. al. 1964). The roots and seeds are reported to have insecticidal, piscicidal, and vermifungal properties (Zafar, R., et. al. 2004).

II. DISCUSSION

Herbal medicines are a valuable and readily available resource for primary health care and complementary health care system. Undoubtedly; the plant kingdom still holds many species of plants containing substances of medicinal value that had to be discovered (National committee for clinical laboratory standards, Approved standards, 2003). Though large numbers of plants are constantly being screened for their antimicrobial effects still there is a search for natural antibiotic. Many plant genetic resources have been analysed from their active

constituents possessing antibacterial activities (Gislene, G. et. al. 2000). Devprakash et al., 2011, revealed that there are two possibilities that may account for the higher antibacterial activity of ethanolic extract (EETP) are the nature and quantity of active constituents (alkaloids, flavonoids, essential oils, terpenoids, tannins, etc.) and the other is the capacity of ethanol may have yielded a great number of active constituents responsible for antibacterial activity (Ates, Q. A. and Turgay, E., 2003). Ethanolic extract of *Tephrosia purpurea* is known to possess flavonoids, alkaloids, terpenoids, saponins, tannins and phenols which either individually or in combination exert antimicrobial activity. Their study showed that ethanol extract of TP inhibited gram negative bacteria than gram positive bacteria. Flavonoids were found to be effective antimicrobial substances against a wide range of micro organisms, probably due to their ability to complex with extra cellular and soluble proteins and to complex with bacterial cell wall; more lipophilic, flavonoids may disrupt microbial membrane. Antibacterial activity of tannins may be related to their ability to inactivate microbial adhesion enzymes and cell envelope transport proteins, they also complex with polysaccharides (Kannan P., et. al. 2009). The presence of which may be responsible for *in vitro* antibacterial activity in this study. Tannin in the plant extract was found to possess antibacterial activity (Natarajan D., et. al. 2005).

Scientific research in herbal medicine with hepatoprotective activity may be a great benefit as an alternative therapy in liver diseases (Pramyothin P., et. al. 2005). Traditional systems of medicine remain the major source of health care for more than two thirds of the world's population and impressive progress has been made in certain developing countries. Recently there has been a shift in universal trend from synthetic to herbal medicine, which we can say "Return to Nature". Medicinal plants have been known for millennia and are highly esteemed all over the world as a rich source of therapeutic agents for the prevention of diseases and ailments (Sharma A., et. al. 2008).

Herbal medicine is still the mainstay of about 75-80% of the world population, mainly in the developing countries, for primary health care because of better cultural acceptability, better compatibility with the human body and lesser side effects (Kamboj V., 2000). Nature has often been referred to as the medicinal garden of the world. Now a days, herbal drug industries is very fast growing sector in the international market (Sharma A., et. al. 2008). In spite of tremendous advances made, only a few significant and effective hepato-protective agents. e.g. *Silymarin* are available in modern therapeutics (Khatri A, Agrawal S. 2009). Hence researchers worldwide are engaged in searching for organ protective i.e, Hepatoprotective drugs from herbal origin (Kumar P., et. al. 2008).

Ayurveda, the ancient system of Indian medicine identified liver diseases quite early and recommends a number of herbal remedies. One such herb Sarapunkha (*Tephrosia purpurea*) is considered useful in bilious febrile attacks, obstruction of liver and spleen. The whole plant is useful in the treatment of liver disorders (Murthy M. S. R. & Srinivasan M. 1993). According to Ayurveda literature, this plant has also given the name of Sarawranvishapaka, which means that it has the property of healing all types of wounds (Despande S. S., et. al. 2003). It is an important component of some preparations such as tephroli and yakrifit used for liver disorders (Sankaran J. R., 1980, & Kumar A., et. al. 1997).

The plant has been regarded as tonic, diuretic and useful in bilious febrile attacks, cough, lightness of the chest, and in biliary and splenic troubles. The leaves are also reported to be useful in jaundice (Kumar A., et. al. 1997). Photochemical investigations on *tephrosia* have revealed the presence of glycosides such as rutin, quercetin and osyritin, retenoids such as deguelin, elliptone, rotenone and tephrosin, flavanoids such as lanceolatin A, B, C, purpurin, purpurenone, purpuritenin and sterols such as β sitosterol (Gokhle A. B., and Saraf M. N. 2000). An isoflavone, 7,4-dihydroxy-3,5-dimethoxyisoflavone and chalcone, (+) tephropurpurin, are also reported to be present in *Tephrosia* (Chang L. C., et. al. 1997). Shah et. al., 2012, studied the hepatoprotective and curative actions of *Tephrosia* was evaluated on commonly used CCl₄ model of experimental hepatic damage in rats.

III. ANTI FUNGAL ACTIVITY OF LEAF EXTRACT OF DERRIS ELLIPTICA

Derris indica a plant belonging to family Fabaceae is a perennial tree (Wealth of India, 2005). Although it grows widely throughout the tropics, it can be found at higher elevations. The tree is frequently found in pastures, waste lands, cultivated lands, roadsides, lawns and in planted forests. In India and Nepal it is found throughout the hotter parts and also worldwide. The plant is used for the treatment of many diseases such as the fruits and sprouts are used in folk remedies for abdominal tumors in India. In India seeds were used for skin ailments. Today the oil is used as a liniment for rheumatism. Leaves are active against micrococcus. The juice of the leaf is used for cold, cough, diarrhea, dyspepsia, flatulence, gonorrhea and leprosy. Roots are used for cleaning gums, teeth and ulcers. Bark is used internally for bleeding piles. Juices of the leaf as well as oils are used as antiseptic. It is said to be an excellent remedy for itch, herpes, etc. powders of the seeds are valued as tonic, for treatment of bronchitis and whooping cough. Flowers are used for treatment of diabetes. Bark has been used for diseases of eye, skin and vagina itch, piles, splenomegaly tumors etc (Malairajan P. 2006). Reported phytoconstituents include the petroleum ether extracts of fresh leaves of *pongamia glabra* yield a new furano flavones 3-methoxy pongapin (Talapatra, S. K. 1985). 3-methoxypongapin, 8-methoxyfurano- (4'' 5'': 6,7)-flavones and earlier flavones and koradji have been isolated along with a known chromenochalcone from ethanol extracts of the seed oil of *Pongamia glabra*. Many pharmacological activities viz. anti-malarial activity of the methanol extracts of the bark of *Pongamia glabra* (Misra P., et. al. 1991). *Glabrachalcone*, a new chromenochalcone have been isolated along with a known chromenochalcone from ethanol extracts of the seed oil of *Pongamia glabra*. many pharmacological activities viz. anti-malarial activity of the methanol extracts of the bark of *Pongamia glabra* (Misra P., et. al. 1991). Antibacterial activity of the seed oil (Patel R. P. and Trivedi B. M. 1962), and wound healings activity of the aqueous extract (Subramanian S. and Nagarajan S., 1998) of the plant *Pongamia glabra* have been reported earlier. However detailed investigation of the anti-fungal activity of it has not been carried out (Mathews A. M, et. al. 2012).

IV. CONCLUSION

Herbs are integral part of nature; plants contain natural substances that can promote health. By screening ethanol and aqueous extracts of *Tephrosia purpurea*, it has been found that the results obtained confirmed therapeutic

potency of some plants used in traditional medicines. Plant based medicines contains rich antioxidants and are traditionally used in different parts of the world. The hypothesis of obtaining plant based medicine is beneficial to human health based on the active profile exposed through various in vitro assays it can be concluded that the ethanol, extract of *Sharpunkha* shows significant antibacterial activities, but aqueous extract could no showed the much desired activity. This could be further exploited by in vivo study systems to increase the overall activity.

Translational significance is an important aspect of research in any field. It is of greater importance when we find and develop newer drugs for the innumerable diseases and disorders that crop up.

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