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Ayurveda

AN ALEXITERIC REVIEW OF CYCLEA PELTATA HOOK. F & THOMSON (PATHA)

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ABSTRACT Herbal origin products today symbolize safety unlike synthetic drugs, which are considered harmful for human and environment. Patha is an important medicinal herb that is widely used since ancient times. Cyclea peltata H. F. & T. is used as source of Patha in southern part of India; also known as Padathalli or Patakizhangu in Malayalam. It belongs to Menispermaceae family which is being traditionally used to cure many diseases. The various indications of Patha like kushta (skin diseases) kandu (Itching), chhardi(vomiting), hrudroha(heart diseases), jwara (fever), atisara(Diarrhoa), shula(pain), visha(Antidote), shwas(asthma), daha(burning), gulma(tumors) , vrana(wounds) etc. are mentioned in ayurvedic texts. Only few of these traditional claims have been investigated and reported. The present review study is an attempt to provide reported information on Vishghna (Antitoxin) activities of Cyclea peltata H. F. & T. This review study can be set as a beginning for more promising activities and can discover potential new compounds from various other herbs mentioned in Ayurveda and folk medicine.

KEYWORDS : Rajpatha, Patha, Cyclea Peltata, Agadtantra, Visha, Vishchikitsa, Toxins.

INTRODUCTION

Patha in a well-known herb, and is being used in traditional medicine. Maharshi Charaka have described Patha in Shaka varga as Patra shak (leafy vegetable) [1] He had also referred Patha dvaya in Kasa Chikitsa, but not specifically classified.[2] Sushruta has mentioned Patha in Eksara gana [3]and Patoladi gana[4] which contains group of antitoxin drugs.Later on, Patha is classified as Laghupatha and Brihat patha (Rajpatha) by Nighantus[5] . Both the varieties are, more or less similar in properties.[6] Patha is also mentioned as antitoxic in Bhavprakasa[7] and Dhanvantari Nighantu[8]. The established source of classical patha is Cissampelos pareira, Linn. whereas in southern part of India Cyclea peltata is used as Patha, which is identified as Rajpatha by north Indians. Some authors have indicated C. peltata as substitute for C. pareira.

MATERIALS AND METHODS:

Ayurvedic Samhitas and other compilatory treatises are reviewed for documenting the information about Patha. The published works on journals and information available on web pages are consulted to review about Patha by Vishgna (Anti-toxin) point of view.

Plant Profile [9][10]

In English it's called the “Pata root”. India has almost 7 species of C. peltata, among 28 species that are found all over the world. This species is widespread throughout Southern part and is very common along west coast of India. It is slender, climbing and twinning shrub, often climbs very tall trees. It has long perennial underground tuberous root. Types of these species were easily identified by the presence of curved sepals & petals.

Leaves: Simple, heart shaped, alternate, peltate, long deltoid, palmately veined, truncate to slightly cordate at base and acute mucronate at apex, upper surface shiny and dark green with a sprinkling of short stiff or bristly whitish hairs over the veins; lower surface is paler, velvety and covered with simple slender minute hairs. Leaves 2.5 to 10cm long and 2.5 to 3.5 cm broad, stipules 5 to 10 cm long.

Flowers: Unisexual, small greenish and inconspicuous. The male and female flowers occur on different plant and are arranged in many flowered supra-axillary branched panicles. Male flowers are subsessile, spicate or gathered into heads. Female flowers are racemose, with oblong sepals that are glabrous. Plant blossoms in blustery season.

Fruits: Small, ovoid, drupaceous “berries” less than or about the size of a pepper, creamy white when ripe, and aggregated in attractive grape-like bunches, 2-6 inches long.

Roots: It's the main officinale part of the plant, the primary root which develops into a tuber, is fairly long, cylindrical, unbranched and uniformly thick and straight when young but becomes crooked or irregularly bent as it gets older. Tubers vary in size from 6 to 24 inches and from 1.5-2 inches. Outer skin is fairly thin and smooth. Usually slate grey to brown tint. The fresh roots break easily at the constrictions with a short fracture. On drying the tubers shrivel up considerably. Both the fresh and dried roots have bitter taste, but no characteristic smell.

Figure 1: Leaves & Fruits of C. peltata
Source:https://www.flickr.com/photos/wwwssncomphotos/32397185066

Figure 2: Dried Roots of C. peltata

Chemical Constituents: [10][11]

In Roots: Cycleacuine, Cycleanorine and Cycleahomine chloride, Cycleapeltine and bisbenzylisoquinoline, Cycleadrine.
In leaves: Cycleanin, berberine, Hayatine, Hayatidine are found in leaves.

Taxonomical Classification [10]
Kingdom: Plantae
Phylum: Tracheophytes
Class: Angiosperms
Order: Ranunculales
Family: Menispermaceae
Genus: Cyclea
Species: C. Peltata

Vishghna Activities of Cyclea Peltata H. F & T.
Anti-toxin activity against Naja naja venom:
The anti-toxin potential of C. peltata was tested against the Naja naja toxin as both ex and in-vivo study. The ex vivo evaluation of venom toxicity and deactivation assesses showed significant results. The inhibitory effect of C. peltata extracts on the acetylcholinesterase activity of venom and protease activity was determined in vitro. Significant results for other tests such as direct hemolysis, PLA2, and procoagulant activity were evident during the analysis. Interestingly, C. peltata extracts also showed good neutralization on the toxicity of venom. In vivo assessment of venom lethality (LD50) and venom-neutralizing potency test (ED50) using C. peltata extract were carried out in the present research. From the obtained results, it was found that C. peltata root extracts could able to neutralize the toxin from the venom. GC-MS analysis of the plant extract revealed the presence of antivenom compounds such as tetradecanoic and octadecadienoic acid which have neutralizing properties on Naja naja venom. Thus, this study proved the scientific validation for the use of Cyclea root as anti-toxin.[12]

Hepatoprotective Activity:
This study was done to evaluate hepatoprotective effect of C. peltata roots extract in carbon tetra chloride and acetaminophen induced hepato toxicity in wistar rats. The results showed that pretreatment with alkaloid extract of C. peltata caused significant reduction of serum glutamate pyruvate transaminase, serum glutamate oxaloacetate transaminase, serum alkaline phosphatase, serum cholesterol and levels of liver malondialdehyde. The reduced levels glutathione, catalase, superoxide dismutase in liver were increased with alkaloid extract of C. peltata. These parameters were later confirmed by HPE studies. From this study it was concluded that the C. peltata act as hepatoprotective agent in acetaminophen and carbon tetra chloride rat models.[13]

Gastroprotective Activity:
Gastric anti-secretory and anti-ulcer properties of C. peltata were studied. The ethanolic extract of Cyclea roots was used in Pylorus ligated rat model and gastric lesions induced by ethanol or ethanol + indomethacin respectively in albino rats. The levels of gastric mucosa, non-protein sulfhydryl groups, malondialdehyde, protein and catalase activity were studied in the same models.

Anti-secretory Activity: The ethanolic extracts of Cyclea showed a significant antisecretory activity, which was demonstrated by significant decrease in the secretion of pepsin, the volume of gastric juice volume and HCl output in pylorus ligated rats.

Anti-ulcer Activity: Pretreatment with Cyclea extract offered significant protection to the gastric mucosa against ulceration caused by ethanol. This treatment showed significant protection from ulcerative lesions. It produced a significant increase in gastric wall mucus, protein, catalase, NP-SH and decrease in malondialdehyde level. Likewise in Ethanol and Indomethacin combination the extract showed the lowest lesion score also the gastric wall mucus and NP-SH levels were increased and there was a significant decrease in the malondialdehyde level. These findings were even confirmed by HPE studies.

These findings demonstrated that Cyclea peltata has potent antisecretory and antiulcer effects and justifies the traditional/ethnic usage of this herb to treat peptic ulcers and consequent stomach ache and there by its gastroprotective activity.[14]

This study was to evaluate the protective effect of Methanolic extracts of C. peltata leaves on Nephro toxicity induced by cisplatin in Wistar rats. The levels of creatinine, urea, Sr sodium, Sr potassium, malondialdehyde, glutathione peroxidase, super oxide dismutase and catalases were determined. Renal damage by cisplatin characterized by significant increase in creatinine and urea, decreased in the group treated with C. peltata, it significantly elevated levels of altered malondialdehyde & decreased levels of glutathione found only in rats treated with Cisplatin. Glutathione peroxidase, superoxide dismutase and catalases activities were significantly increased with extract. This study showed that C. peltata can effectively improve the oxidative stress parameters observed in cisplatin induced renal function and can be used as a natural antioxidant against oxidative stress induced by cisplatin. [15]

CONCLUSION
The drugs/herbs mentioned in ancient texts of ayurveda and folk medicine have shown their potency compared to synthetic drugs along with almost nil adverse effects. C. peltata is one of them, has shown Vishghna/antitoxin activities. These activities were shown to be due to the presence of alkaloids, phenolics and coumarins. This review explored a number of promising antitoxin activities of C. peltata. Current information of this herb can serve as a starting point for extensive studies to discover potential herbs/compounds and further investigate their biological activity.

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