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# An Overview of *Neptunia prostrata*: A Source of Herbal Medicine of Ethnopharmacological Importance



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## Introduction

Plants are used in the treatment of various diseases from the ancient time. The use of plants as a source of medicine lies deep in the root of antiquity. The traditional Indian system of medicine, Ayurveda and Unani are based on the use of plants, animals and other natural substances. The history of medicinal plants dates back to Rigveda, perhaps the oldest repository of human knowledge, which was written in about 4500-1600 B.C and Ayurveda (about 2500 B.C) which provide the detail accounts of many herbal drugs [1]. Most of the medicinally active substances investigated in the 19th and 20th centuries used in the form of crude extract [2,3]. Medicinal plants and natural product derived medicines are widely used in traditional cultures all over the world and they are becoming increasingly popular in modern society as natural alternatives to synthetic medicines [4]. Several herbal cosmetics, nutraceuticals and remedies are flooded in the market nowadays.

In the last few decades there has been an exponential growth in the field of herbal medicine and it is gaining popularity in developing and developed countries owing to its natural origin and lesser adverse effects [5,6]. The World Health Organization (WHO) estimated that approximately 80% of world population rely mainly on traditional medicines, mostly plant drugs in their health care [7]. A plant is biosynthetic laboratory for myriads of chemical compounds like carbohydrates, proteins and lipids that are consumed as food also compounds like glycosides, alkaloids, steroids, volatile oils, tannins etc. that produces biological effects as well [8]. Natural products from medicinal plants provide limitless opportunities for new drug leads due to the diverse and abundant availability. Due to the rise in the adverse effects and resistance to the chemically synthesized drugs, world has turned to ethnopharmacognosy exploring several plant based drugs with biological activities like anticancer, antimicrobial, antioxidant, antidiarrheal, analgesic and wound

healing activity etc [9-11]. In this context, this article focuses on the ethnomedicinal uses of the plant *Neptunia prostrata* used in the north eastern region of India.

## Ethno-medicinal uses of *Neptunia prostrata*

*Neptunia prostrata* (Synonym: *Neptunia oleracea*) belongs to the family Mimosaceae and is an annual floating aquatic herb usually distributed in lakes and marshy places all over India [12,13]. It is found in 25 different states of India including the north-eastern state Tripura [14,15]. As an edible medicinal plant, *Neptunia prostrata* (Figure 1) is well-known to the herbal practitioners of Tripura as well as other states of North-eastern region of India. The tribals of Tripura cultivate this plant both as vegetable as well as medicinal plant and prepare various tasty delicacy dishes with this vegetable [15,16]. The plant has been used for different types of remedies like gastritis, acidity, constipation, dysentery, and also reported to possess hepatoprotective, analgesic and antimicrobial activity [14-18]. The ethnopharmacological approaches used for the treatment of several ailments has been compiled in Table 1 [19-22].



**Figure 1:** *Neptunia prostrata* twig containing leaf and stem.

**Table 1:** Table 1: Ethnomedicinal uses of *Neptunia prostrata*.

S. No.	Parts used	Preparation	Ethno-medicinal importance
1	Twigs/ young shoots	Crushed twigs are mixed with the paste of un-boiled rice (atapchal) & made into large sized pills, fried & taken orally or with meals.	Gastritis, acidity and constipation [19]
2	Stem	Stem juice is instilled into the ear.	Earache [20]
3	Root & stem	The decoction of root and stem.	Gonorrhoea [20]
4	Leaf	Half glass of leaf decoction is taken orally for about a fortnight.	Dysuria (burning sensation during urine pass), treats high fever [21]
5	Whole plant	The infusion of the whole plant is applied on the body of the patient.	Fever [22]
6	Pounded roots	The pounded roots are applied over the nose to treat syphilitic ulcers of the nose while decoction is taken to treat syphilis.	Sphillitic ulcers of nose and syphilis.
7	Roots	The roots extract is taken for the treatment	Diarrhoeas, for necrosis of the nose and hard palate.
8	Young twigs	The decoction of the young twigs are taken with salt	White discharge [21]
9	Whole plant	The whole plant extract is taken	Helminthiasis, dipsia [22]
10	Roots	The root extract of this plant is taken	Late and advanced stages of syplillis.

**Future prospects**

According to the folklore, *Neptunia prostrata* is a useful herb to treat several ailments including hepatitis or jaundice. However, identification of bio-active molecules behind the treatment of these diseases has not been explored or documented till date. Therefore, it can be a great opportunity to explore the plant for

isolation and identification of the bioactive components from this astounding medicinal herb.

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