

ETHNOBOTANICAL STUDIES ON AN ANTIMALARIAL, ENDANGERED PLANT *VITEX PEDUNCULARIS* WALL

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ABSTRACT

The paper concerns ethnobotanical studies on an antimalarial, endangered plant of Jharkhand, *Vitex peduncularis* Wall. locally called 'Charaigorwa' because of the shape of the young trifoliate leaf with a flattened peduncle resembling the leg of a bird (in local language of Jharkhand 'charai' means bird; and 'gorwa' means leg). Decoction of the leaf as well as the bark is claimed to have preventive and curative properties against several diseases including malaria by the traditional herbal medicine practitioners of Jharkhand.

Key words: Antimalarial, Endangered, *Vitex peduncularis*, Ethnomedicine.

Introduction

The genus *Vitex* has about 250 species of shrubs and trees (1-35 meter tall) and is native to tropical, sub-tropical and warm temperate regions throughout the world. It was previously included in the family Verbenaceae; however, recently it has been transferred to the family Lamiaceae. *Vitex peduncularis* Wall., is a middle-sized to large deciduous tree (Fig. 1A). It used to grow in the forests of Bihar, Bengal and Madhya Bharat during the British period in India. The density of this species over the years have sharply declined because of its ethnomedicinal use. The bark from the stem as well as the root is indiscriminately removed (Fig. 1B, 1C) for use as ethnomedicine and also for preparing a special beverage by boiling the bark in water and drinking it as 'chai' (means tea) by the local tribal inhabitants. The indiscriminate removal of the bark results in the death of

the tree, which is the main reason for its depletion from the forests making it an endangered species.

Materials and Methods

Vitex peduncularis Wall. is commonly called 'charaigorwa' by the local inhabitants of Jharkhand, because of the similarity of the shape of its young leaf to that of the leg of a bird (Fig. 1D). It used to grow quite abundantly about 50 years ago as a wild species in the forests of the southern part of the then Bihar State (now carved out as Jharkhand State) of India, as per the information gathered from the local tribal inhabitants and the herbal medicine practitioners; however, at present it has become a very rare species in the forests because of over-exploitation. For the present studies, one tree (Fig. 1A) of this species which has been saved by the owner (Mr Saban

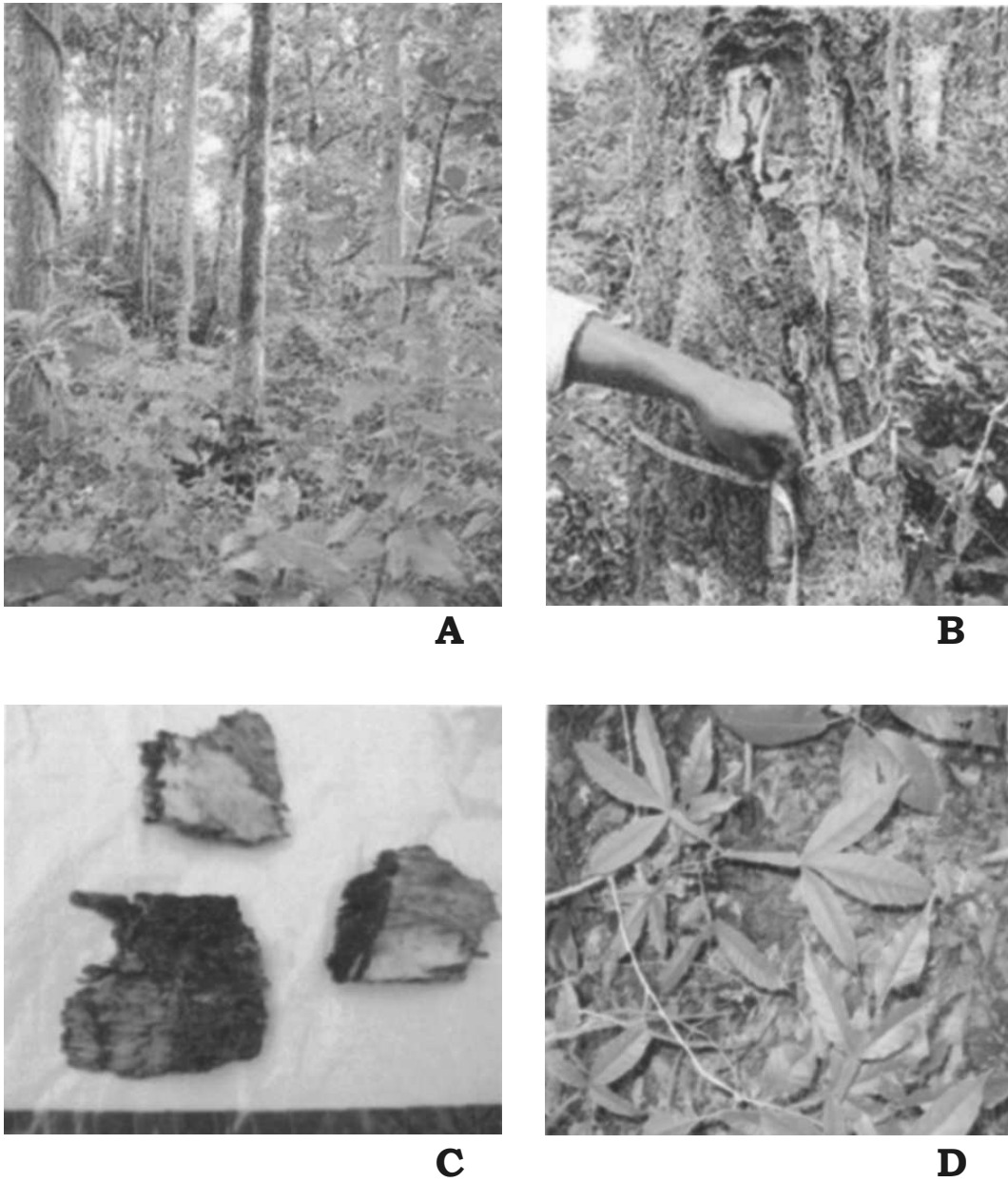


Fig.1. A. *Vitex peduncularis* a tree, at the base of which are standing two persons including the second author, amidst trees of *Shorea robusta* in the forest. **B.** The same tree, showing scars due to removal of bark, measuring 4 ft in perimeter, 3 ft above ground level. **C.** Bark pieces removed showing brown colouration due to tannin. **D.** One small plant growing in the same forest.

Herenz, a Munda tribe) of a forest village, named Bangru, located about half a kilometer east from the village home of the senior author, at Pharsabera in the Simdega District (situated about 156 km south of Ranchi, the capital of Jharkhand), and some seedlings germinated naturally and developed underneath in its vicinity (Fig. 1D). Two of such seedlings were carefully uprooted from that forest and transplanted in the garden of the senior author for further studies and conservation. With proper care, the transplanted plants showed good growth in the garden (Fig. 2A), where the young leaves appeared like the leg of a bird (Fig. 2B).

Observations and Discussion

The tribal population and the other original inhabitants of Jharkhand have been using *Vitex peduncularis* for the treatment of diseases such as chest pain and malarial fever. The leaves as well as the bark from the stem or root of this plant, when boiled in water, yields a colour similar to the tea leaves boiled in water. Such a 'chai' or 'tea' of *V. peduncularis*, has become quite popular amongst the tribals residing in the deep forest villages in the southern part of Jharkhand State. They say such a 'tea' is very refreshing, specially after tiring jobs. In fact, we observed that such a warm drink is even sold in the weekly markets, called 'haat', in the forest village area. Indiscriminate removal of the bark from the stem of the tree, for the purpose of preparing such drinks has been the main reason for the depletion of this species from the forests; for removal of bark kills the tree; and as this tree is a hard wood tree, it was often used for preparing the agricultural tools: yoke and plough.

When the plants of *Vitex peduncularis* were available in plenty in the forests of Jharkhand earlier, the first bath of ladies after childbirth used to be such a boiled

water considering it very hygienic. The leaves of another species of *Vitex*, namely *Vitex negundo*, locally called 'sinduar', is also having aseptic qualities. It has insect-repelling qualities as well. Its leaves are kept in the grains of wheat or rice to prevent loss from insects and worms during storage. The leaves of this species along with the leaves of *V. peduncularis* were used to be boiled and the decanted, warm water used for taking bath after the malarial fever or fever due to any other reason was over. As *V. peduncularis* has become rarer these days; *V. negundo* is usually practiced for such a hygienic bath during recovery from illness. It is noteworthy here that considering the traditional insect repelling qualities, the twigs of *V. negundo* / *Anacardium occidentale* are inserted in the paddy fields here and there, in the morning following a tribal sacred festival 'Karma', celebrated on the 11th day of the Hindi month "Bhadrapada" every year; worshipping the tree of *Edena cordifolia* (a branch of this tree is sacredly planted in the courtyard of the village Head).

As regards the antimalarial activity of *Vitex peduncularis*, Vaughan (1921) found that the aboriginal tribes of certain parts of the then Bihar (now Jharkhand) were well acquainted with this plant and used it in the treatment of malarial fevers and also of blackwater fever. They prepared an infusion of the leaves or of the root bark or young stem and took it internally several times a day with much benefit. Jones and Butler (1924), on the other hand, found no conclusive evidence of any effect whatever of *Vitex* on the symptoms or the plasmodia in malaria: on the contrary, the effect of quinine in four cases was prompt. They came to the conclusion that if *Vitex* has any effect in malaria, it is negligible as compared to quinine. Rao and Venkateswarlu (1956) obtained vitexin from *Vitex peduncularis*. Rao and Ramaiha (1965) did chemical

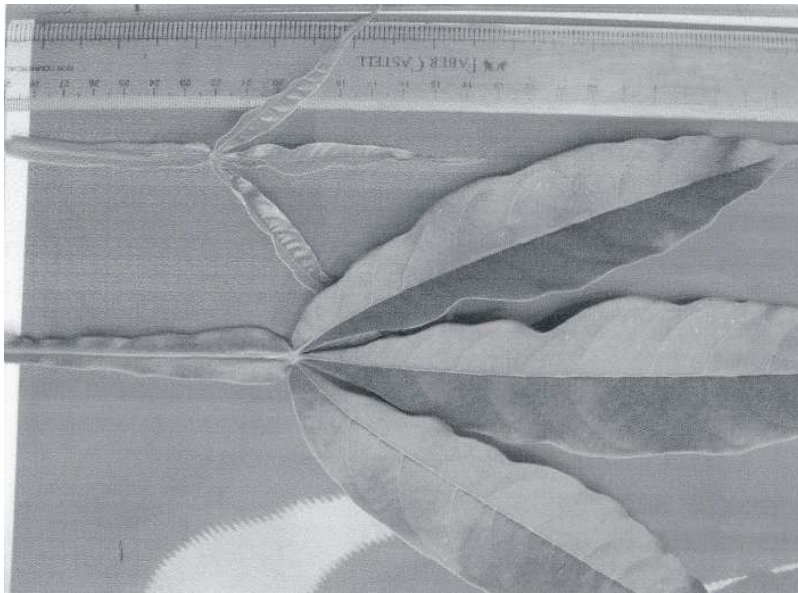
**A****B**

Fig.2. A. *Vitex peduncularis*. Transplanted from forest into the garden, of the senior author, showing good growth. **B.** Young and mature leaf, note the appearance of young leaf like the leg of a bird.

investigation of the *Vitex* species. Sukumaran *et al.* (2002) from Bangkok have reported a new iridoid, pedunculariside, together with the known iridoid agnuside from butanol extract of *Vitex peduncularis* stem bark. Both pedunculariside and agnuside showed preferential inhibition of Cox-2. Sahu *et al.* (1984) found triterpenoides and flavonoides in the leaves of *Vitex peduncularis* which has antimalarial activity. Recently, Krishnan *et al.* (2007) observed differential larvicidal efficacy of four species of *Vitex* against *Culex quinquefasciatus* larvae. The leaf extracts showing highest efficacy in order were those of *V. trifolia*, then *V. peduncularis*, then *V. altissima* and then *V. negundo*. Goswami (2001) and Goswami *et al.* (1998) have also reported antimalarial activity of the extracts of *Clerodendron infortunatum* on experiments with albino rat. This was suggested that the *Clerodendron* plant can be tried as an alternative source.

Different plant species have been in use as ethnomedicine against malaria in different countries. For example, Gessler *et al.* (1994)

have screened Tanzanian medicinal plants for antimalarial activity. They observed 43 species commonly used by herbal healers in traditional medicine for the treatment of malaria. Clarkson *et al.* (2004) reported 134 plant species native to or naturalized in South Africa showing antiplasmodial activity. Bertani *et al.* (2005) reported on ethnomedicine for traditional antimalarial remedies being practised in French Guiana. In our country also there is a need to compile the information regarding traditional ethnomedicinal practices of different plant species in different regions so that no such useful plant species may become endangered or extinct; and that the most suitable and efficacious drug may be obtained in future against different diseases.

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