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Ethnopharmacological Note

Multiple traditional medicinal uses of *Heliotropium indicum* L. (Boraginaceae)

Rashed Reza, Md. Sohrab Hosen, Sayef Shahriad Ripon, Mohammed Rahmatullah*

Department of Pharmacy, University of Development Alternative, Lalmatia, Dhaka-1207, Bangladesh

**Mohammed Rahmatullah: rahamatm@hotmail.com*

Abstract

Heliotropium indicum L. (Boraginaceae), known in English as Indian heliotrope and in Bengali as Hatishur is an annual plant and considered a weed by farmers but as a valuable medicinal plant by traditional medicinal practitioners. The plant is native to Asia. Traditional healers in Kancheepuram district of Tamil Nadu, India topically apply paste of whole plant to treat wounds and skin infections (Muthu et al., 2016). In Kumaragiri Hills of Salem district, Tamil Nadu, India, leaf juice mixed with hot water is applied to snake bite and scorpion sting (Alagesaboopathi, 2009). Multiple uses of the plant have been reported from Africa. In Mali, the plant is used for treatment of vomiting, amenorrhoea, baby thinness, ocular infections, and high blood pressure. Leaf decoction is used in Sierra Leone for washing new-borne babies. Sap is applied to gumboils, to clean ulcers, and to cure eye infections in Nigeria and Ghana. Decoction of whole plant is taken as febrifuge in Guinea. Leaf powder is used in Senegal for dermatitis, suppurating eczema and impetigo in children. In Ivory Coast, dry leaf powder is taken nasally as decongestant for colds and sinusitis. Besides these African countries, in Indonesia, leaf decoction is used in thrush and in poultices for herpes and rheumatism (reviewed in Togola et al., 2005). Other uses of the plant as reviewed by Dash and Abdullah (2013), include using orally decoction of entire plant in Philippines and Senegal as diuretic and for treatment of kidney stone (Quisumbing, 1951; Berhault, 1974); infusion of flower taken orally in Jamaica for treatment of menorrhagia (Asprey and

Thornton, 1955); decoction of the entire plant is also taken orally in Jamaica for intractable fever, ulcers, venereal diseases, sore throat, and applied to vaginal cavity to induce abortion and administered rectally to treat rectal sores; decoction of entire plant used in Rodrigues for treating herpes and using paste of fresh plant for cleansing and dressing of wounds and ulcers. In West Indies, paste of fresh entire plant is used for head lice (Ayensu, 1978). In Thailand, dried inflorescence (oral administration) is believed to produce permanent sterilization in females (Panthong et al., 1986). Leaf paste is applied topically for skin infections in Nicaragua; decoction of a combination of leaf and root is used for treatment of whooping cough in children in Eastern Nicaragua (Barrett, 1994; Coee and Anderson, 1996). The plant is also used in South America, where in the Amazon region, paste of leaf and root together is applied externally to insect bites and scorpion stings (Duke, 1994). However, the same paste is applied for treating hepatitis in Taiwan (Lin and Kan, 1990). Leaves and stems of *Heliotropium indicum* are used as antidote to poisoning and leaf paste to treat bone fractures by folk medicinal practitioners in Rajshahi district, Bangladesh (Nawaz et al., 2009). In Pabna district of Bangladesh, a folk medicinal practitioner has been reported to use the roots of this plant to treat swelling of knees, joint pain, and severe itching in leg joints accompanied by oozing of fluid from the joints (Kamal et al., 2014). Folk medicinal practitioners in Manikganj district, Bangladesh use root juice of the plant to treat chicken pox and leaf juice to treat allergy (Shahnaj et al., 2015). In Natore district, Bangladesh, a folk medicinal practitioner uses the root for blood purification and to treat infections (Akhter et al., 2016). Random surveys in various areas of Rajshahi and Tangail districts, Bangladesh were conducted among folk medicinal practitioners (FMPs) to find out other uses of *Heliotropium indicum* (Figure 1). In Rajshahi district, one FMP (Idrish Ali, male, age 65 years) used paste of leaves topically to stop bleeding from external cuts and wounds and to stop any pain occurring from bleeding; Amjad Hossain (male, age 75 years) applied leaf juice to eyes to clear blurred vision; Afroza Begum (female, age 41 years) used leaf juice to stop bleeding as well as for blurred vision; Md. Shahjahan Ali (male, age 67 years) used roots (oral administration) to stop abnormal bleeding during menstruation. The informants were all from Bagha Thana (Police Station). In Tangail district, Toripon Nessa of Nagarpur Thana (female, age 75 years) mix leaf juice with a pinch of table salt and apply it to eyes once daily for 3-4 days as treatment for cataract, intraocular pressure and eye pain. Since *Heliotropium indicum* is a common plant in Bangladesh, specimen plants from both Rajshahi and Tangail were simply shown at the Bangladesh National Herbarium and made certain as to their being actually *Heliotropium indicum*. Preliminary experimental studies suggest that aqueous whole plant extract may be beneficial in selenite-induced cataract in rat pups (Kyei et al., 2015) and galactose-induced cataract in Sprague-Dawley rats (Kyei et al., 2017). Cataract needs surgery, which can be expensive and also lead to post-surgical complications. Untreated high intraocular pressure (IOP) can lead to glaucoma and loss of eye-sight. Cataract remains the major cause of avoidable blindness in Bangladesh according to Bangladesh Government statistics. Glaucoma is another leading factor for blindness in Bangladesh. As such, *Heliotropium indicum* can provide a novel and affordable solution for treatment of cataract and glaucoma.

Keywords: medicinal plants, *Heliotropium indicum*

Declaration of conflict of interest

No conflict of interest associated with this work.

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Figure 1. *Heliotropium indicum* L.