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Ethnopharmacological Note

### **Novel anti-cancer use of *Artocarpus heterophyllus* Lam. nodules and *Butea monosperma* (Lam.) Taub. bark**

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### **Abstract**

*Artocarpus heterophyllus* Lam. (Moraceae), known in English as ‘jackfruit’ and in Bengali as ‘kanthal’ is a tree widely found in Bangladesh cities and villages grown for its nutritious fruits and seeds and is also the national fruit of the country. *Butea monosperma* (Lam.) Taub. is a flowering deciduous tree grown both as an ornamental tree, and also because it is considered a medicinal plant in Ayurveda. The tree is known in English as ‘flame of the forest’ because of its scarlet flowers and in Bengali as ‘palash’. Various traditional medicinal uses of *Artocarpus heterophyllus* have been reviewed (Prakash et al., 2009). The uses of leaves, fruits, seeds and roots include treatment of fever, boils, wounds, and skin diseases (leaves); use as laxative, aphrodisiac, and brain tonic (fruits); used as diuretic (seeds); and treatment of skin diseases, asthma, fever, and diarrhea (roots). Ayurvedic uses of *Butea monosperma* include treatment of piles, skin diseases and leprosy (flowers, seeds), and new leaves for spleen disorders (Wanjari et al., 2016). In Bangladesh, the roots are chewed as sex stimulant in Rahmatpur village by the Ghaghat River in Rangpur district (Rahmatullah et al., 2010). The leaves of *Artocarpus heterophyllus* are used in Barisal district, Bangladesh to stop vomiting and for headache; roots are used for hydrocele; seeds are used for low semen density, frequent passing of stool, and less frequency of urination (Naher et al., 2013). Crown galls can be seen in *Artocarpus heterophyllus* trees caused by

*Agrobacterium tumefaciens* (Islam et al., 2010). Locally, the nodules (crown gall) are known as 'gutis' (plural form). In this note, we report a novel use of 'gutis' found on *Artocarpus heterophyllus* (Fig 1) along with bark of *Butea monosperma* (Fig 2). The informant is a folk medicinal practitioner (FMP) named Fazlur Rahman, male, and practicing in Narabari village in Dinajpur district in the northern part of Bangladesh. In his formulation, the FMP used a paste of the 'gutis' with bark of *Butea monosperma* to make pills, which were dried under the sun. One pill was to be taken orally twice daily in the morning and evening. The FMP claimed that this formulation can cure any type of cancer. Interestingly, ethanol extract of crown gall tumours induced on *Eucalyptus tereticornis* tree reportedly yielded 1-ethyl-6-(1'-methyl-1'-phenylethyl) piperidin-2-one, 3 $\beta$ -hydroxy-24-methylstanosta-8,17(20),24(28)-trien-22-oic acid, and stigmasterol-3-O-glucoside; all three compounds demonstrated significant cytotoxic activity against two human cancer cell lines, breast (MCF7) and colon (HCT116) (Salama et al., 2013). *Butea monosperma* flowers contain butein, which reportedly induces cell apoptosis in A549 lung cancer cells (Li et al., 2014). Plant extract has been shown to have an inhibitory effect on hepatic carcinogenesis (Sehrawat and Sultana, 2006). Cancer cell inhibitory activities have been found with butanol fraction of bark of the plant (Kaur et al., 2017). Thus, cumulatively speaking, the novel formulation of the FMP merits scientific consideration towards a new anti-cancer therapy.

Keywords: medicinal plants, *Artocarpus heterophyllus*, *Butea monosperma*

### Declaration of conflict of interest

No conflict of interest associated with this work.

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Figure 1. *Artocarpus heterophyllus* with nodules shown within red circles



Figure 2. *Butea monosperma*