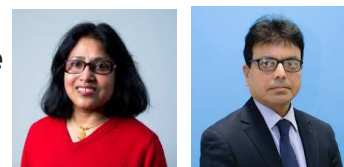




Guest Editorial

'Thankuni' [*Centella asiatica* (L.) Urban]: When food is medicineLUTFUN NAHAR¹✉*, AND SATYAJIT D. SARKER²✉*¹Laboratory of Growth Regulators, Institute of Experimental Botany ASCR & Palacký University, Šlechtitelů 27, 78371 Olomouc, Czech Republic²Centre for Natural Products Discovery (CNPD), School of Pharmacy and Biomolecular Sciences, Liverpool John Moores University, James Parsons Building, Byrom Street, Liverpool L3 3AF, United Kingdom

Thankuni [*Centella asiatica* (L.) Urban; synonyms: *Hydrocotyle asiatica* L.; *Trisanthus cochinsinensis* Lour.] is one of the widely consumed Bangladeshi edible plants from the family Apiaceae (alt. Umbelliferae) (Fig. 1). 'Thankuni', also known as 'Goku Kola' in India, is an herbaceous perennial plant, indigenous to Bangladesh, India and a few other Asian countries, as well as in the wetlands of the South-East USA (Gohil et al., 2010). In English, this plant is called 'Indian pennywort' or 'Asiatic pennywort'.

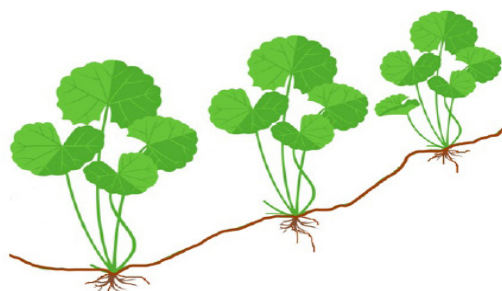
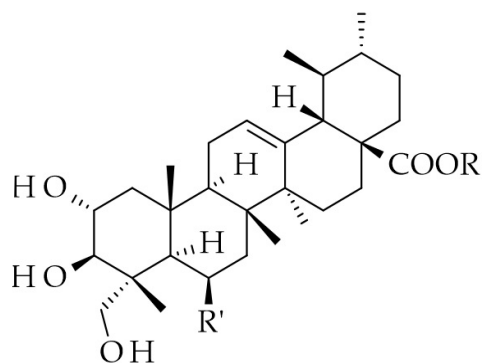


Fig. 1. 'Thankuni' plant.

In Bangladesh, the leaves of *C. asiatica* are used to prepare various food items, e.g., Thankuni pakora, Thankuni paste (mashed Thankuni) and Thankuni juice, and used in the cooking of various vegetable and fish curries, while the leaves are extensively used in various fresh leaf salads in Cambodia, Indonesia, Myanmar, Sri Lanka, Thailand and Vietnam. Various traditional medicinal uses of the leaves of *C. asiatica* are well documented in the literature, and in fact, 'Thankuni' is a household name in Bangladesh not only as a food item, but also as a traditional remedy for various human ailments and for the treatment of minor wounds. 'Thankuni' is still in

use in Bangladesh as a home remedy for the treatment of minor stomach upsets, diarrhoea and dysentery. This herb has also found its place in the Indian traditional medicine, the Ayurveda, indicating its use to improve memory and concentration. In the Traditional Chinese Medicine (TCM), *C. asiatica* is considered as a 'elixir of life'. Other traditional medicinal uses of *C. asiatica* include its applications in the treatment of amenorrhoea, anxiety, eczema, fever, leprosy, lupus, psoriasis, skin inflammation and varicose ulcers (Gohil et al., 2010). *Centella asiatica* has been quite extensively studied phytochemically, revealing the presence of several bioactive pentacyclic triterpenes, e.g., asiatic acid, asiaticoside, brahmic acid and madecassoside (Fig. 2), as major compounds.



Asiatic acid R = R' = H
 Asiaticoside R = trisaccharyl (glucose-glucose-rhamnose), R' = H
 Brahmic acid R = H, R' = OH
 Madecassoside R = trisaccharyl (glucose-glucose-rhamnose), R' = OH

Fig. 2. Structure of major pentacyclic triterpenes found in *C. asiatica*.

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Similarly, numerous *in vitro* and *in vivo* biological and pharmacological studies with this plant and its secondary metabolites have established their efficacy as an antidepressant, antiepileptic, anti-inflammatory, antimicrobial, antinociceptive, antioxidant, anti-ulcer, anxiolytic, concentration-increasing, memory-enhancing, sedative and wound-healing agent (Gohil et al., 2010; Biswas et al., 2021; Chi et al., 2021; Gao et al., 2021; Vasanth et al., 2021; Wong and Ramli, 2021). In a most recent study, *C. asiatica* extract as well as one of its major compounds, asiaticoside, have been found to inhibit cholera toxin production in *Vibrio cholerae*, and to affect the transcription of *ctxA* gene expression (Vasanth et al., 2021). Swain et al. (2021) have provided scientific evidence for the effective use of *C. asiatica* plant extract for the treatment of leprosy, and asiatic acid was shown to be the active component responsible for this activity.

Because of its long-standing traditional uses as a medicine and food, 'Thankuni' has been developed into various commercially available and over the counter medicinal and wound healing products, and food supplements, e.g., Gotu Kola concentrated extract tablets, Gotu Kola tincture, Gotu Kola capsules and Centasoothy Botanical Serum S5, manufactured by Natura's Garden, Indigo Herbs, Naturisimo, and Facetheory, respectively. One of the recent patents obtained with *C. asiatica* has described methods for treating scars and aging skins (Widgerow, 2021). Many preclinical and clinical studies, carried out to date (Biswas et al., 2021), have validated the therapeutic potential of *C. asiatica* and its components, and ranked this plant as one of the most popular edible plants that can also be used as a remedy for various human ailments.

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