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**Effect of solvent system on the extraction of phenolic compounds and antioxidant capacity of *Gloriosa superba* L.****Amit Bahukhandi, Anjali Barola, I D Bhatt and R S Rawal**

GB. Pant National Institute of Himalayan Environment and Sustainable Development, India

*Gloriosa superba* Linn. (Family: Colchicaceae), commonly known as Malabar glory lily; Kalihari; Glory lily is grown in semi-shade open areas. The species is distributed throughout temperate zone of India, Burma, Malaysia, Sri Lanka at an altitude of 2100 m above sea level. In India, it is found in southern parts to the mid hill zones of Himachal Pradesh, Jammu Kashmir, Uttar Pradesh and Uttarakhand. The species is brilliant wavy-edged yellow and red flowers. The plants have reported richest sources of colchicine and gloriosine. Recently, colchicine is reported prime importance for its possible use in cancer treatment. The species has been reported to use in the Indian and Chinese system of medicine for its analgesic, anti-inflammatory, antimicrobial and antitumor properties. In addition, it is used in the treatment of snake bite, skin diseases, fever, inflammation and respiratory disorders by local communities. The rhizome and its paste is used for the treatment of colic, paralysis, chronic ulcer, bruises, sprains and considered useful in promoting labor and expulsion of placenta. The essential oil of the species is used in cosmetic industries. Therefore, rhizome portion of *Gloriosa superba* was sampled and analyzed for polyphenolic and antioxidant capacity in different solvent system and for harnessing maximum potential. Results revealed a significant variation ( $p < 0.05$ ) in analyzed parameters among solvent systems. Total phenolic content ranged between 0.54-1.35 mg GAE/g; flavonoid 0.66-1.85 mg QE/g; flavonol 0.33-1.03 mg QE/g and tannins 1.08-3.47 mg TAE/g dry weight and maximum exhibited in methanolic solvent. Similarly, antioxidant activities were determined *in vitro* assays varied significantly (ABTS 2.67-4.09; NO 2.26-4.05; DPPH 1.24-4.58 and OH 0.14-0.41 mM AAE/100 g dry weight). Among different solvent types, methanolic extract was recorded best for harnessing maximum antioxidant potential; however, highest reducing antioxidant power (0.54 mM AAE/100 g dry weight) was found in acetone. Total phenolic content showed significant ( $p < 0.05$ ) positive relationship with flavonoid ( $r = 0.905$ ); tannin ( $r = 0.914$ ) and antioxidant activity (ABTS- $r = 0.967$ ; NO- $r = 0.994$ ;  $p < 0.01$ ; OH- $r = 0.927$ ;  $p < 0.05$ , respectively). Likewise, flavonol showed strong correlation ( $p < 0.01$ ) with tannin ( $r = 0.978$ ) and hydroxyl radical scavenging antioxidant activity ( $r = 0.971$ ). Tannin positively correlated ( $p < 0.05$ ) with antioxidant activity (ABTS- $r = 0.892$ ; NO- $r = 0.914$ ; OH- $r = 0.971$ ;  $p < 0.01$ , respectively). The results of the present study are indicative of the fact that the species possess polyphenolic content and antioxidant activity and therefore, can be a source of natural antioxidant. Solvents with moderate polarity such as methanol and acetone showed higher polyphenolics and antioxidant activity, therefore, can be utilized for harnessing maximum polyphenolics content.

amit.bahukhandi@gmail.com