ABSTRACT

Dioscorea bulbifera Linn. (DB) is a perennial herb (Yam), used as a famine food. It is known as Varahikanda, Charmakaraluka, Varahavadana, Grishti and Varada in Ayurvedic system of medicine. It has been used for treating haematological disorders, scrofula, syphilis, haemorrhoids, flatulence, diarrhoea, dysentery, worm infestations, general debility, diabetic disorders, polyuria and skin disorders. Based on its traditional claims and its use in times of food scarcity, it has been decided to study the nutritional and biological potential of DB. In the present study, the physico-chemical parameters such as loss on drying, ash content, extractive value, etc., were analysed to check the quality of the DB tuber. Further the phytochemical constituents such as phenolics, alkaloids, anthocyanin content including the micronutrients such as ascorbic acid, α-tocopherol, Cu, Zn, Fe, Mg, Mn were analysed to establish the nutritional potential of DB tuber. In order to authenticate the DB tubers, the HPTLC fingerprinting of the crude extract was documented. Bioassay guided screening of the various fractions of the crude extract suggested the presence of bioactive substances such as phenolics and the marker compound diosgenin (DIOS) in an appreciable amount in the ethyl acetate soluble fraction (ESF) of DB tubers. Detailed studies with ESF and DIOS in isoproterenol (ISO) induced myocardial infarction rat model showed a potent cardioprotective effect. The cardioprotective effect of ESF and DIOS was studied by analyzing various biochemical parameters such as cardiac marker enzymes, mitochondrial and lysosomal enzymes, markers of oxidative stress and histopathological analysis. It was identified that DB attenuated the myocardial damage caused by isoproterenol by modifying the oxidative status and membrane permeability potential. The biological activity exhibited by DB probably is due to the phytoconstituents present in the tubers.