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Bioactivity studies of *Nyctanthes arbor-tristis*. Linn. flowers as potential sources of traditional medicine

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Sri Lanka is a country with a diverse variety of fragrant flowers, many of which possess medicinal properties. *Nyctanthes arbor-tristis* Linn (Sepalika) is used as an antidiabetic, anti-leishmanial, antimicrobial, and immunostimulant. This study aimed to explore the selected biological activities of its flowers extracted into water and methanol. Flowers were collected from Peradeniya, Sri Lanka. The methanol extract (ME) was obtained by sonicating the air-dried powdered flowers with methanol and dried using a rotary evaporator. The water extraction (WE) was obtained by hot water filtration and freeze-dried. Their antioxidant potential was tested using 2,2-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging and ferric-reducing antioxidant power (FRAP) assays. Enzyme inhibitory potential was tested against α-amylase and lipase enzymes. Cytotoxicity with brine shrimp lethality assay. The results of the DPPH assay revealed that WE has a stronger antioxidant potential with an IC_{50} of 5.15±0.26 mg L^{-1} which had no significant difference with the positive control, ascorbic acid (IC_{50} 1.97±0.06 mg L^{-1}). ME resulted in a moderate radical scavenging activity (IC_{50} 122.22±6.21 mg L^{-1}). According to FRAP values, WE resulted in a FRAP value of 2.31±0.03 µmol $FeSO_4$/mg of the sample, whereas, ME resulted in 1.34±0.02 µmol $FeSO_4$/mg of the sample. However, they were significantly lower than the positive control, trolox (12.07±0.30 µmol $FeSO_4$/mg of the sample). In the α-amylase assay, WE resulted in a percentage inhibition of 52.63±0.05% whereas ME resulted 6.81±0.09% at 1000 mg L^{-1}. When compared with the positive control, acarbose which resulted in 100±0.00% inhibition at 1000 mg L^{-1}, WE showed a moderate α-amylase inhibition which is stronger than the ME at the tested concentration. However, cytotoxicity in brine shrimp assay and lipase inhibition were not detected. In the case of lipase inhibition, the flower colour, which matched that of the indicator, significantly influenced the outcomes, resulting in negative results. In conclusion, WE of Sepalika flowers demonstrated, higher antioxidant potential and α-amylase inhibitory potential than ME, suggesting its potential for future research applications.

Keywords: *α-Amylase inhibition, antioxidant potential, methanol extract, Sepalika flowers, water extract*