A novel compound isolated from *Passiflora suberosa* with potential antidiabetic activity

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ABSTRACT

Passiflora suberosa L. belongs to the family Passifloraceae and is commonly known as "wild passion fruit"/"Thiththa wel" is used in traditional medicine against diabetes. To date, hypoglycemic potential of *P. sbersoa* has not been reported nationally and internationally. The present study focused on biologically guided fractions for *P.subersoa* to identify inhibitory activities of carbohydrate hydrolysis enzymes and isolate a novel therapeutic active molecule against hypoglycemia. The methanol extract of *P.subersoa* was partitioned with hexane, chloroform, and ethyl acetate, and *In-vitro* hypoglycemic activity was evaluated using α-amylase and α-glucosidase inhibitory activities. The α-amylase inhibitory and α-glucosidase inhibitory activities were determined. The ethyl acetate fraction was selected for compound isolation using silica gel 60 and Sephadex LH20 column chromatography through bioactivity guided fractionation. Once an active sub-fraction of chromatography was established, it was further purified using reverse-phase HPLC purification and liquid chromatography-mass spectrometry (LC-MS) analysis. Finally, the structural elucidation was carried out using nuclear magnetic resonance (NMR) analysis. The ethyl acetate fraction exhibited the highest α-amylase (IC_{50}: 284.63±0.51 µg/mL) and α-glucosidase (IC_{50}: 120.80±1.33 µg/mL) inhibitory activity compared with the positive control ($IC_{50\alpha\text{-amylase}}$: 197.51±0.32 µg/mL; $IC_{50\alpha\text{-glucosidase}}$ 116.62±1.41 µg/mL). The structure was elucidated using NMR spectroscopy after purification of active sub-fraction by reverse-phase HPLC and liquid chromatography-mass spectrometry (LC-MS). The structural elucidation data suggested a novel organic compound "A" was isolated. According to the results, alpha-amylase inhibitory activity was exhibited by the isolated compound was (IC_{50}: 133.51µg/mL) compared to the positive control (IC_{50} =197.51±0.32 µg/mL). Similar inhibitory activity was observed in an alpha-glucosidase inhibitory activity where of the isolated compound exhibited (IC_{50}: 154.39 µg/mL) compared with the positive control (IC_{50} =116.62±1.41 µg/mL).

Key words: *Passiflora suberosa*, compound isolation, hypoglycemic

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BIOGRAPHY

Dinithi Peiris has completed his PHD in 1998 from the University of Sheffield, UK. She currently serves as a professor at University of Sri Jayewardenepura, Sri Lanka She has supervised many postgraduate and undergraduate students and authored numerous publications that have been cited over 500 times, and his publication h-index is 15.

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