

COMPARISON OF THE PHYTOCHEMICAL CONTENTS AND *IN-VITRO* ANTI-DIABETIC AND ANTI-OBESITY ACTIVITIES OF THE TWO VARIETIES OF *Piper nigrum* (BLACK PEPPER)

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Piper nigrum, commonly known as black pepper, is a widely used spice in Sri Lanka due to its pungency. In Sri Lanka, there are two varieties of *Piper nigrum* (local and hybrid varieties) based on the morphological variations of their leaves and seeds. However, they share the same scientific name. Hence, this study aimed to compare the total phytochemical constituents and anti-diabetic and anti-obesity activities of the two varieties of black pepper, which were collected from a local farmer. The crude extracts of hexane, ethyl acetate and methanol were obtained using sequential extraction by maceration. The total alkaloid content (TAC), total flavonoid content (TFC), and total phenolic content (TPC) of each variety were determined using bromocresol green (BCG) reagent method [piperine equivalent (PE)], aluminium chloride colorimetric method [quercetin equivalent (QE)] and Folin-Ciocalteu reagent method [gallic acid equivalent (GAE)] respectively. Anti-diabetic and anti-obesity activities were determined using α -amylase inhibition assay and pancreatic lipase inhibition assay, respectively. Highest total alkaloids, flavonoids and phenolic content were observed in the local variety. Among these, phenolic and flavonoid contents were higher for hexane extract of the local variety (TPC: 2.35 ± 0.01 mg GAE/g and TFC: 20.72 ± 7.95 mg QE/g), while higher alkaloid content was observed for methanol extract (8.35 ± 0.03 mg PE/g) of the local variety. Anti-obesity potential is higher for hexane extract of the local variety (IC_{50} 17.18 ± 2.96 mg/L), however, there are no significant differences in the anti-diabetic potential of hexane extracts of both local (IC_{50} 53.93 ± 5.73 mg/L) and hybrid (IC_{50} 48.41 ± 3.97 mg/L) varieties. Thin-layer chromatographic studies of all extracts showed the presence of the same compounds in both varieties. Hence, it is assumed that the differences in bioactivities may be due to the differences in the amounts of compounds present in each variety. Further studies are required to identify the compounds responsible for these activities and their percentage in each variety.

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