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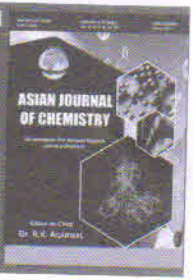

Phytochemical Composition and Pharmacological Activities of *Peperomia pellucida* Methanolic Leaf Extract: Antioxidant, Antidiabetic and Anticancer Potentials

SHYBEY MARIAM ABRAHAM and IWIN C. VARKEY*

Department of Chemistry, CMS College of Science and Commerce, Coimbatore-686001, India

*Corresponding author: E-mail: iwin.c.varkey@gmail.com

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This study explores the phytochemical composition and biological activities of methanolic leaf extracts of *Peperomia pellucida*. Phytochemical screening and GC-MS analysis revealed a wide range of bioactive compounds including alkaloids, flavonoids, tannins, phenols and terpenoids, with the methanolic extract showing the richest profile. Antioxidant activity measured by the DPPH assay demonstrated strong free radical scavenging potential (IC_{50} = 75.4 µg/mL), comparable to ascorbic acid. The extract also exhibited potent antidiabetic effects through inhibition of α-amylase (IC_{50} = 60.8 µg/mL) and α-glucosidase (IC_{50} = 52.8 µg/mL), exceeding the standard drug acarbose. Furthermore, anticancer evaluation on MCF-7 breast cancer cells showed dose- and time-dependent cytotoxicity, inducing apoptotic features such as cell shrinkage, nuclear fragmentation and DNA cleavage, confirmed by AO/EB staining and DNA fragmentation assays. Overall, the methanolic extract of *P. pellucida* demonstrates strong antioxidant, antidiabetic and anticancer potential, supporting its future application in therapeutic development and cancer medicine.

Keywords: *Peperomia pellucida*, Methanolic extract, Antioxidant activity, Antidiabetic activity, Anticancer activity.