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Phytochemical Analysis And *In-Vitro* Evaluation of Antioxidant and Hypolipidemic Activity of Ethanolic Extract of *Trema orientalis* L. Blume Leaves

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Abstract

Traditional medicine has been the most popular means of healthcare from the olden days, before the emergence of alternative medicine in the form of synthetic agents. Traditional medicine can be said to be indigenous and a culture handed over to us by our ancestors as a means of surviving from various ailments evident in every society. High levels of reactive oxygen species in the body and hyperlipidemia are vital factors for the development of cardiovascular diseases such as atherosclerosis. The present study investigated the antioxidant and hypolipidemic activity of the ethanolic extract of *Trema orientalis* L. Blume leaves (EETO). Preliminary phytochemical analysis revealed the presence of phytoconstituents such as steroids, flavonoids, glycosides, alkaloids, phenolic compounds, which is further confirmed by estimating the total phenolic and Flavanoids. The antioxidant activity of EETO was assessed by 2,2-diphenyl-1-picrylhydrazyl free radical (DPPH) scavenging capacity. Hepatic steatosis was induced by culturing HepG2 cells with palmitic acid. Lipid accumulation was detected by the Oil Red O staining method. The activation of AMPK by pharmacological agents presents a unique challenge, given the complexity of the biology, but holds a considerable potential to reverse the metabolic abnormalities. In vitro tests showed the antioxidant activity of EETO, and both EETO and Simvastatin stimulations weakened palmitic acid-mediated Oil Red O stains in a dose-dependent manner. In this study, we showed that AMPK phosphorylation was stimulated by EETO. EETO inhibits hepatic lipid accumulation via the activation of the AMPK signalling pathway.

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