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Abstract No: 155 ***Life Sciences***

ENZYME INHIBITORY ACTIVITY OF COMPOUNDS ISOLATED FROM AN ENDOPHYTIC FUNGUS ASSOCIATED WITH *CURCUMA LONGA*

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Endophytic fungi are known as treasure houses of natural bioactive compounds. The objectives of this study are to isolate endophytic fungi from *Curcuma longa* L. (Zingiberaceae), known as turmeric, isolate their compounds, elucidate the structures and determine the bioactivities. After triple sterilisation, small rhizome pieces of C. longa were placed on Potato Dextrose Agar (PDA). The isolated fungus was tentatively identified as *Fusarium oxyporum* by analysis of ITS1 and ITS4 regions of the rDNA gene. Identification will be confirmed by using other specific gene regions. The fungus was grown on a large scale on Potato Dextrose Broth (PDB). After 4 weeks, the broth and the mycelium were extracted separately into ethyl acetate. After observing the similarities in their Thin Layer Chromatography (TLC), the two extracts were combined. The crude extract was subjected to chromatographic separation (silica gel column chromatography followed by Sephadex LH 20, HPLC and PTLC). This resulted in two pure compounds, and their structures were elucidated using spectral data as fusaric acid (1) and 9,10-dehydrofusaric acid (2). They were subjected to α-amylase, α-glucosidase, lipase and acetylcholinesterase enzyme inhibitory assays. The results revealed that Compound 2 has a strong potential to inhibit α-amylase enzyme activity (IC_{50} of 22.23±4.63 mg L^{-1}) while the positive control acarbose showed IC_{50} of 1.3±0.57 mg L^{-1}. Acetylcholinesterase enzyme activity was strongly inhibited by Compound 1 (IC_{50} of 23.6±5.2 mg L^{-1}) and moderately inhibited by Compound 2 (IC_{50} of 85.8±6.91 mg L^{-1}), whereas the positive control donepezil showed IC_{50} of 0.1±0.01 mg L^{-1}. Both these compounds showed no inhibition of the activities of α-glucosidase and lipase enzymes. Based on these findings, both Compound 1 and Compound 2 have the potential to be used as natural enzyme inhibitors.

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Keywords: Acetylcholinesterase, α-Amylase, *Curcuma longa,* Endophytic fungi