

**ENZYME INHIBITORY ACTIVITY OF TWO CARBAZOLE ALKALOIDS
ISOLATED FROM *Murraya koenigii* (CURRY LEAVES)**

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Since ancient times, people have used plant parts and plant extracts to cure diseases and to relieve pain. Since the beginning of the 18th century, scientists have been discovering many plant-based drugs that are still used in medical practices. A current drug discovering strategy is to search for enzyme inhibitors. Inhibition of α -amylase or α -glucosidase enzyme with an effective inhibitor is one treatment strategy to control blood glucose level in diabetic patients. Acetylcholinesterase enzyme inhibitors are used in the treatments of neurological disorders. *Murraya koenigii* (Curry leaves) is used in Sri Lankan cuisine as a leafy spice and in the production of cosmetics because of its distinct aroma. Many carbazole and triterpenoid alkaloids with different pharmacological activities have been reported from *M. koenigii*. This study was focused on the investigation of α -amylase, α -glucosidase and acetylcholinesterase enzyme inhibitory activities of compounds present in leaves of *M. koenigii*. Dry powdered leaves were sequentially extracted with hexane, ethyl acetate and methanol and crude extracts obtained were chromatographed to furnish two pure compounds. The compounds were identified as 8-hydroxymahanimbine and (+)-(R) mahanine based on NMR analysis. The two carbazole alkaloids were tested for inhibitory activities against α -amylase, α -glucosidase and acetylcholinesterase enzymes. 8-Hydroxymahanimbine showed the highest α -amylase inhibitory activity of IC₅₀ 85.2 $\mu\text{g mL}^{-1}$ and α -glucosidase inhibitory activity of IC₅₀ 63.5 $\mu\text{g mL}^{-1}$ while (+)-(R) mahanine showed α -glucosidase inhibitory activity of IC₅₀ 52.9 $\mu\text{g mL}^{-1}$ and acetylcholinesterase inhibitory activity IC₅₀ 29.7 $\mu\text{g mL}^{-1}$. These findings suggest that 8-hydroxymahanimbine has a good potential as antidiabetic agent while (+)-(R) mahanine shows dual activities as an antidiabetic agent and an anticholinesterase agent. This is the first report of 8-hydroxymahanimbine as a natural product.

Keywords: Carbazole alkaloids, Enzyme inhibitors, 8-Hydroxymahanimbine, (+)-(R) mahanine