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Phytochemical investigations of Stemona curtisii and synthetic studies on stemocurtisine alkaloids

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Abstract

The isolation of two new Stemona alkaloids, 1-hydroxyprotostemonine and stemocurtisine N-oxide, and a new benzofuran, stemofuran L, from the root extracts of Stemona curtisii is reported. The major known alkaloids from this plant extract, stemocurtisine, stemocurtisinol, and oxyprotostemonine, were also isolated along with oxystemokerrine N-oxide. The nonalkaloid components of this extract included a new benzofuran derivative, stemofuran L, the known stemofurans F, J, and K, dihydro-γ-tocopherol, and stigmasterol. Stemocurtisine and stemocurtisinol were converted to their respective N-oxides by oxidation. Stemocurtisine was converted to a tetracyclic derivative by oxidative cleavage of the γ-butyrolactone ring, while stemocurtisinol gave a novel lactam derivative by oxidative cleavage of the C-4 side chain under basic conditions. The acetylcholinesterase inhibitory activities of some known and new alkaloids and their derivatives are also reported. All were 10–20 times less active as acetylcholinesterase inhibitors than the pyrrolo[1,2-a]azepine Stemona alkaloids stemofoline and 1′,2′-didehydrostemofoline. None of the stemofuran compounds showed significant antibacterial or antifungal activities.

Keywords

stemona, phytochemical, curtisii, investigations, synthetic, studies, stemocurtisine, alkaloids

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