Comparison of antioxidative properties of carbazole alkaloids from Murraya koenigii leaves

Abstract

A new dimeric carbazole alkaloid, 8,10′-[3,3′,11,11′ -tetrahydro-9,9′-dihydroxy-3,3′,5,8′-tetramethyl-3, 3′-bis(4-methyl-3-pentenyl)]bipyrano[3,2-a]carbazole (12), was isolated from the CH2Cl2 extract of Murraya koenigii together with six known carbazole alkaloids, koenimbine (6), O-methylmurrayamine A (7), O-methylmahanine (8), isomahanine (9), bismahanine (10), and bispyrayafoline (11). Their structures were determined on the basis of 1H and 13C NMR spectroscopic and mass spectrometric (MS) data. The antioxidative properties of 12 carbazole alkaloids isolated from leaves of M. koenigii were evaluated on the basis of the oil stability index together with their radical scavenging ability against 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical. On the basis of the lag time to reach a steady state, the 12 carbazoles were classified into three groups. It is suggested that an aryl hydroxyl substituent on the carbazole rings plays a role in stabilizing the thermal oxidation and rate of reaction against DPPH radical.

Keyword: Carbazole; Murraya koenigii; curry leaf; antioxidant; oil stability index (OSI); 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical