

New flavan and alkyl alpha, beta-lactones from the stem bark of *Horsfieldia superba*.

ABSTRACT

In the present study phytochemical investigation of the methanol extract of the stem bark of *Horsfieldia superba* led to the isolation of twenty compounds (1-20), of which three (1-3) were new. However, compounds 2 and 3 were previously reported as synthetic alpha,beta-lactones. The compounds were characterized as (-)-3,4',7-trihydroxy-3'-methoxyflavan (1), (-)-5,6-dihydro-6-undecyl-2H-pyran-2-one (2), and (-)-5,6-dihydro-6-tridecyl-2H-pyran-2-one (3). Seventeen other known compounds were also isolated and identified as (-)-viridiflorol (4), hexacosanoic acid (5), beta-sitosterol (6), methyl 2,4-dihydroxy-6-methylbenzoate (methylorsellinate) (7), methyl 2,4-dihydroxy-3,6-dimethylbenzoate (8), (-)-4'-hydroxy-7-methoxyflavan (9), (-)-4',7-dihydroxyflavan (10), (-)-4',7-dihydroxy-3'-methoxyflavan (11), (+)-3,4',7-trihydroxyflavan (12), (-)-catechin (13), (-)-epicatechin (14), (-)-7-hydroxy-3',4'-methylenedioxyflavan (15), 2',3,4-trihydroxy-4'-methoxydihydrochalcone (16), 3',4',7-trihydroxyflavone (17), (+)-4'-hydroxy-7-methoxyflavanone (18), hexadecanoic acid (palmitic acid) (19) and 3,4-dihydroxybenzoic acid (20). The structures of the compounds were fully characterized by various physical methods (melting point, optical rotation), spectral (UV, IR, ID and 2D NMR) and mass spectrometric techniques. In vitro assay of compounds 2 and 3 demonstrated moderate cytotoxic activities against human prostate (PC-3), colon (HCT-116) and breast (MCF-7) cancer cells, while the chloroform and ethyl acetate fractions of *H. superba* were found to exhibit moderate AChE inhibitory activity (IC₅₀ 72 and 60 microg/mL).

Keyword: *Horsfieldia superba*; Myristicaceae; Flavan; Alkyl alpha; Beta-lactones; Cytotoxicity; Acetylcholinesterase inhibitor