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J Nat Prod. 2007 Aug;70(8):1233-9. Epub 2007 Aug 9.

Cucurbitane-type triterpenoids from the fruits of Momordica charantia and their cancer chemopreventive effects.

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Abstract

Thirteen cucurbitane-type triterpene glycosides, including eight new compounds named charantosides I (6), II (7), III (10), IV (11), V (12), VI (13), VII (16), and VIII (17), and five known compounds, 8, 9, 14, 15, and 18, were isolated from a methanol extract of the fruits of Japanese Momordica charantia. The structures of the new compounds were determined on the basis of spectroscopic methods. On evaluation of these triterpene glycosides and five other cucurbitane-type triterpenes, 1-5, also isolated from the extract of M. charantia fruits, for their inhibitory effects on the induction of Epstein-Barr virus early antigen (EBV-EA) by 12-O-tetradecanoylphorbol-13-acetate (TPA) in Raji cells, these compounds showed inhibitory effects on EBV-EA induction with IC(50) values of 200-409 mol ratio/32 pmol TPA. In addition, upon evaluation of compounds 1-5 for inhibitory effects against activation of (+/-)-(E)-methyl-2[(E)-hydroxyimino]-5-nitro-6-methoxy-3-hexemide (NOR 1), a nitrogen oxide (NO) donor, compounds 1-3 showed moderate inhibitory effects. Compounds 1 and 2 exhibited marked inhibitory effects in both 7,12-dimethylbenz[a]anthracene (DMBA)- and peroxynitrite (ONOO-; PN)-induced mouse skin carcinogenesis tests.

PMID: 17685651 [PubMed - indexed for MEDLINE]

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