Abstract:

Five new triterpenoid saponins, heinsiagenin A 3-O-\(\beta\)-L-rhamnopyranosyl-(1\(\rightarrow\)2)-\(\beta\)-D-glucopyranosyl-(1\(\rightarrow\)2)-\(\beta\)-D-glucopyranoside (1), heinsiagenin A 3-O-\(\beta\)-L-rhamnopyranosyl-(1\(\rightarrow\)2)-\(\beta\)-D-glucopyranosyl-(1\(\rightarrow\)2)-\(\beta\)-D-glucopyranosyl-(1\(\rightarrow\)4)-\(\beta\)-D-glucopyranoside (2), 2\(\alpha\)-hydroxyheinsiagenin A 3-O-\(\beta\)-L-rhamnopyranosyl-(1\(\rightarrow\)2)-\(\beta\)-D-glucopyranosyl-(1\(\rightarrow\)2)-\(\beta\)-D-glucopyranosyl-(1\(\rightarrow\)4)-\(\beta\)-D-glucopyranoside (3), 2\(\alpha\)-hydroxyheinsiagenin A 3-O-\(\beta\)-D-glucopyranosyl-(1\(\rightarrow\)2)-\(\beta\)-D-glucopyranosyl-(1\(\rightarrow\)4)-\(\beta\)-D-glucopyranoside (4) and N-(2S, 3R, 4R-3-methyl-4-pentanolid-2-yl)-18-hydroxylanosta-8(9), 22E, 24E-trien-27-amide-3-O-\(\beta\)-L-rhamnopyranosyl-(1\(\rightarrow\)2)-\(\beta\)-D-glucopyranosyl-(1\(\rightarrow\)2)-\(\beta\)-D-glucopyranosyl-(1\(\rightarrow\)4)-\(\beta\)-D-glucopyranoside (5) were isolated from the aerial parts of Mussaenda luteola Delile (Rubiaceae). Structural elucidation was based on the analysis of spectroscopic data (1D and 2D NMR) and HR-ESIMS. Compound 1 showed potent antitrypanosomal activity with an IC50 value of 8.80 μM. Compounds 2-4 showed highly potent antitrypanosomal activity with IC50 values ranging between (2.57-2.84 μM) and IC90 values ranging between (3.36-4.35 μM), which are 5 fold greater than the positive control DFMO (IC50 and IC90 values of 13.06 and 28.99 μM, respectively). Compounds 1 and 2 showed moderate affinity to \(\beta\)-opioid receptors with Ki values of 9.936 μM and 0.872 μM, respectively compared to a Ki value of 1.958 nM for the positive control, naloxone HCl.

Keywords:

Mussaenda luteola, Rubiaceae, Triterpenoid saponins, Antitrypanosomal, \(\beta\)-Opioid receptor binding

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