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Antiprotozoal Activity against Entamoeba histolytica of Flavonoids Isolated from Lippia graveolens Kunth

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Abstract : Amebiasis caused by Entamoeba histolytica, associated with high morbidity and mortality, is currently a significant public health problem worldwide, especially in developing countries. In the world, around 50 million people develop this illness, and up to 100,000 deaths occur annually. Due to the side-effects and the resistance that pathogenic protozoa show against common antiparasitic drugs (e.g., metronidazole), growing attention has been paid to plants used in traditional medicine around the world to find new antiprotozoal agents. In this study is reported about the isolation and structure elucidation of antiamoebic compounds occurring in Lippia graveolens Kunth (Mexican oregano). The work-up of the methanol extract of L. graveolens afforded the known flavonoids pinocembrin (1), sakuranetin (2), cirsimaritin (3) and naringenin (4) by bioguided isolation using several chromatographic techniques. Structural elucidation of the isolated compounds was based on spectroscopic/spectrometric analyses (IR; 1H- and 13C-NMR; MS) and comparison with literature data. These compounds showed significant antiprotozoal activity against Entamoeba histolytica trophozoites using in vitro tests (positive control metronidazole IC50 0.205 µg/mL). The antiprotozoal activity of pinocembrin and naringenin (IC50 of 29.51 µg/mL and 28.85 µg/mL, respectively) was higher compared with sakuranetin (44.47 µg/mL) and with cirsimaritin (150.00 µg/mL), revealing that a 5,7-dihydroxylated A ring is essential for antiprotozoal activity. These research funds may validate the use of this plant in the traditional Mexican medicine for the treatment of some digestive disorders and can help to integrate the use of extracts of L. graveolens in the conventional and complementary medicine for the treatment of parasitic diseases.

Keywords : amoebiasis, antiprotozoal agents, bioguided isolation, infectious diseases
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