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ANTIMICROBIAL ACTIVITY OF FLAVONOIDS FROM *Manilkara zapota* (L.) LEAVES

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Manilkara zapota (L.) (Synonyms: *M. zapotilla, M. achras, Mimusopus manilkara, Achras zapota,* and *A. sapota),* commonly known as Sapodilla belongs to the Sapotaceae family [1]. It is an evergreen, glabrous tree, 8-15 m in height, and native to Mexico and Central America. In folk medicine, the leaves are used to treat coughs, colds and diarrhea [2]. For this reason, the antimicrobial properties of ethanolic extract, fractions and isolated compounds from *M. zapota* leaves were assessed by determining the minimal inhibitory concentrations (MICs) in relation to a Gram-positive bacterium, a yeast and a dermatophyte with the broth microdilution technique [3]. The MIC values were obtained after 24 hours, 18 hours and 5 days for their respective pathogens. Moreover, the separation of compounds was performed by means of chromatographic techniques (LC flash and preparative-HPLC, with H_2O−CH_3CN gradients) using the high polarity fraction obtained from the ethanol extract of the leaves. The structures of three compounds (4, 5 and 6 samples in the MIC) were elucidated through 1D and 2D NMR spectroscopic data (in CD_3OD on a Bruker 500 MHz spectrometer) as well as MS data (High-resolution ESITOFMS techniques). The pseudomolecular ions were obtained at *m/z* 481.0986 $[M + H]^+$; (481.0982 calcd for $C_{21}H_{21}O_{13}$ –); *m/z* 463.0877 $[M–H]^-$ (463.0877 calcd for $C_{21}H_{19}O_{12}$.) and *m/z* = 477.1039 $[M–H]^-$ (477.1033 calcd for $C_{22}H_{21}O_{12}$.). Thus, the structural elucidation showed that the isolated compounds from *M. zapota* leaves are flavonoids (Flavon-3-ol glycosides). The MIC values for the samples are reproduced in Table 1. In conclusion, the ethanol extract fractions and isolated compounds from *M. zapota* leaves demonstrated potential antimicrobial action. Furthermore, the compound 4 (myricetin-3-glucoside) proved to be potentially active against *S. aureus* (MIC of 8 µg/mL) and also showed high activity against *T. rubrum* (MIC of 16 µg/mL).

Table 1: Minimum Inhibitory Concentration (MIC) of the ethanolic extract (1), fractions (2, 3) and isolated compounds (4, 5 and 6) from *M. zapota* leaves.

	MIC (µg/mL)							
Strain	1	2	3	4	5	6	Pos. ctrl*	
C. albicans (ATCC 10231)	16	16	16	>128	>128	>128	8[a]	
T. rubrum (SNB-TR1)	256	128	>512	16	64	128	$3.125x10^{-3}$ [a]	2[b]
S. aureus (ATCC29213)	128	32	128	8	32	32	2[c]	

*Positive control: [a] fluconazole; [b]itraconazole; [c]oxacilin.

References:

[1] Quattrocchi F.L. 2000 CRC World Dictionary of Plant Names-Common Names, Scientific Names, Eponyms, Synonyms and Etymology. Boca Raton, London, New York, Washington, DC: CRC Press; p. 1609-10.

[2] Mohiddin H.M.Y.B, Chin W., Holdsworth D. 1992. Traditional medicinal plants of Brunei, Darussalam Part III. Sengkurong. Int J Pharmacog; 30: 105-108.

[3] Clinical and Laboratory Standards Institute, 'Reference Method for Broth Dilution Antifungal Susceptibility Testing of Yeasts; Approved Standard', 2008 3rd ed, Document M27-A3, CLSI, Wayne.

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