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ETHYL ACETATE AND HYDROALCHOLIC EXTRACTS: AN ANALYSIS OF THE PHOTOPROTECTIVE POTENTIAL AND PHENOLIC COMPOUND CONTENT OF THE MELALEUCA VIMINALIS SPECIES

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The purpose of this study was to analyze the relationship between the amount of phenolic compounds and the photoprotective capacity of extracts obtained through ultrasound-assisted extraction (UAE) from *Melaleuca viminalis* leaves. To achieve this goal, plant material was collected in the city of Divinópolis, MG, where 100 g of selected leaves were cut, dried in an oven at 40 ºC, and subsequently ground before undergoing the extraction process. The following solvents were used for extraction: 1–ethyl acetate, 2–ethanol:water (8:2), 3–ethanol:water (7:3), and 4–ethanol:water (1:1). Phenolic compounds were quantified using the Folin-Ciocalteu method[1], employing gallic acid as a standard at concentrations of 600, 300, 150, 75, 37.5, and 18.75 µg/mL. The extract obtained with ethyl acetate (1) showed the highest level of phenolic compounds (70.5 ± 2.357 GAE/g), while the ethanol:water (1:1) extract (4) presented the lowest value (15.5 ± 1.179 GAE/g), followed by the ethanol:water (8:2) extract (2) (20.92 ± 1.768 GAE/g). Due to the statistically significant differences observed among most extracts, the photoprotective potential was assessed using the modified Mansur method[2], with samples of each extract at 0.2 mg/mL in methanol:water (8:2) analyzed in a spectrophotometer within the UVB range (290 to 320 nm), with readings every 5 nm. Although the ethyl acetate extract (1) contained the highest phenolic content, it did not achieve the highest sun protection factor (SPF), which was obtained by the ethanol:water (1:1) extract (4) – SPF 42, followed by the ethanol:water (7:3) extract (3) – SPF 37.75. Therefore, no direct correlation was found between the amount of phenolic compounds and the SPF of the *M. viminalis* extracts. However, all extracts complied with the ANVISA regulations, which require a minimum SPF of 6 for a substance to be considered photoprotective. Thus, all the extracts proved to be promising options for developing products with photoprotective effects.

Keywords: *Callistemon viminalis, leaves, UVB ray*

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[1] BONOLI, M. et al. Journal of Agricutural and Food Chemistry, v. 52, n. 16, 2004, p. 5195.
[2] PINHO, J. et al. HU Revista, v. 40, n. 1 e 2, 2014, p. 81.