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SOLVENT-DEPENDENT CHEMICAL PROFILING AND ANTIMICROBIAL ACTIVITY OF *N*-HEXANE AND DICHLOROMETHANE EXTRACTS DERIVED FROM HYDRODISTILLED ESSENTIAL OIL OF *PHYSALIS ANGULATA* L. FRUITS

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Abstract. GC–MS analysis revealed that 59 compounds (96.3%) were identified in the *n*-hexane extract of hydrodistilled essential oil from the fruits of *Physalis angulata* L., with a predominance of fatty acids and their derivatives, including *n*-hexadecanoic acid (21.13%) and conjugated linoleic acid (9.46%). The dichloromethane extract contained 34 compounds (80.15%), mainly oxygenated volatile constituents such as 1-hexanol (24.03%), furfural (6.04%), and 3-hexen-1-ol (5.10%), along with fatty acids. Solvent polarity was shown to play a decisive role in extraction selectivity, with *n*-hexane preferentially extracting lipid components, whereas dichloromethane promoted the extraction of oxygenated volatile compounds. Antimicrobial evaluation demonstrated that the dichloromethane extract exhibited the highest activity against *Bacillus subtilis* (19 ± 0.12 mm), with lower activity against *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Candida albicans*, whereas the *n*-hexane extract showed weaker effects. The observed bioactivity can be attributed to the solvent-dependent chemical composition of the extracts, especially the combined effects of fatty acids, alcohols, and aldehydes, potentially mediated by membrane disruption and synergistic interactions. These findings indicate that solvent-dependent fractionation is a key factor in determining the chemical and biological profiles of *P. angulata*.

Keywords: *Physalis angulata*, angular physalis, fruits, essential oil, gas chromatography–mass spectrometry, antimicrobial activity.

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