



Research article

Exploring the biological activities of the *Hylocereus polyrhizus* extract

Omayma M. Ismail^{1*}, Mohamed S. Abdel-Aziz², Mosad A. Ghareeb³, Rabeay Y. A. Hassan⁴

¹Horticultural Crops Technology Department, National Research Centre(NRC), Dokki, 12622, Giza, Egypt.

²Microbial Chemistry Department, National Research Centre, Dokki, Giza, Egypt.

³Medicinal Chemistry Department, Theodor Bilharz Research Institute, Giza,12411, Egypt.

⁴Microanalysis Laboratory, Applied Organic Chemistry Department, National Research Centre (NRC), Dokki, 12622, Giza, Egypt.

Key words: Pitaya, *Hylocereus polyrhizus*, antimicrobial, antioxidant, GC-MS, 5-cedranone, cell viability.

***Corresponding Author: Omayma M. Ismail**, Horticultural Crops Technology Department, National Research Centre(NRC), Dokki, 12622, Giza, Egypt.

Abstract

In the current study, the chemical constituents of the methanol extract of Pitaya (*Hylocereus polyrhizus*) were identified. The antimicrobial activity was evaluated via cup agar, and disk diffusion methods using five pathogenic bacterial & fungal strains *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Candida albicans*, *Aspergillus niger*, and *Fusarium oxysporum*. Also, the total antioxidant capacity (TAC) was evaluated via phosphomolybdenum method, and total phenolic content (TPC) was evaluated via Folin-Ciocalteu's assay. The GC-MS analysis revealed the presence of five identified compounds representing (91.15%) of the total composition viz., 5-cedranone (73.05%), β -selinene (7.25%), eucalyptol (6.54%), and terpinolene (3.69%). The results showed that the methanol extract exhibited strong antimicrobial activity against the five strains expressed by inhibition zones as 29, 29, 29.5, 17.5, and 29.5 mm by cup agar method, and 9.5, 11, 10, 8, and 16.5 mm by disk diffusion method against *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Candida albicans*, *Aspergillus niger*, and *Fusarium oxysporum* respectively. Moreover the TAC value was 726.73 mg AAE/g dry extract, and the TPC was 432.88 mg gallic acid equivalent/g dry extract. In conclusion, the methanol extract of *Hylocereus polyrhizus* fruit showed strong antimicrobial activity, which may be return to its oxygenated terpenes like 5-cedranone, eucalyptol, and α -terpineol.