Development and evaluation of *Dracaena trifasciata* hydrogel: A multifunctional approach for topical therapeutic formulations

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ABSTRACT

Dracaena trifasciata is a widely used ornamental plant that possesses an array of bioactive compounds contributing to its potent antibacterial, anti-inflammatory, antipyretic, analgesic and anti-diabetic properties. The current research involved extracting bioactive compounds from D. trifasciata employing ethanolic and methanolic solvents, followed by the evaluation of their phytochemical profiles and antioxidant activities. These extracts were then used to develop hydrogel formulations F1, F2, and F3, each containing ethanolic extract, methanolic extract, and a combination of both, respectively. These formulations were examined for their spreadability, pH levels, physical stability, and extrudability. The antibacterial activity of these formulations was subsequently tested against pathogens to determine their potential use as topical agent. The ethanolic and methanolic extracts of D. trifasciata revealed the presence of various bioactive compounds and demonstrated significant antioxidant activity. The formulations exhibited ideal physicochemical properties, including pH, spreadability, extrudability, and physical stability. They also exhibited significant antibacterial activity against P. aeruginosa, S. pyogenes, E. coli which validates their potential as effective and reliable topical agents.

***Keywords**:* Antioxidant, *Dracaena trifasciata*, hydrogel, phytochemicals, topical formulation.