ELABORATION OF ELECTROSPUN MEMBRANES WITH Melaleuca alternifolia ESSENTIAL OIL AS A POTENTIAL TREATMENT OF CANKER SORES

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Canker sores appear in the mouth and often make eating and talking uncomfortable. They can appear by different factors such as physical or chemical tissue injury, viral or bacterial infections, nutritional deficiencies, autoimmune diseases and genetic factors. The lesions are treated with home remedies as salt, Benadryl and medical treatments as local anesthetics, tetracycline suspensions and corticosteroids. Natural compounds as Tea tree essential oil (Melaleuca alternifolia) have showed good activity on wound healing.

Membranes of pullulan nanofibers by incorporating M. alternifolia were elaborated through electrospinning technique. Biopolymer solutions were prepared at 20% of PULL/water with 1% of the essential oil. The solvent used in this experiment was distilled water in order to avoid the use of toxic solvents which could be cytotoxic and therefore inappropriate for drug delivery systems. The essential oil was added to the pullulan and water solution and then magnetically stirred until it was well incorporated. This solution was stored overnight and mixed again right before the electrospinning process. The best parameters of the electrospinning process were: 15 kV of voltage, 15 cm of distance between the needle and the collector, and a flow rate of 1 ml/h. The samples were characterized by FTIR, DRX, SEM. Cytotoxicity tests were made on human fibroblasts (Detroit 548), and antimicrobial activity were tested on oral pathogens.

In addition, the obtained membranes have potential as a new alternative for local treatment of canker sores.

Keywords: Melaleuca alternifolia, Electrospinning, Canker sores

References:


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