

## Formulation of Anti-inflammatory Topical Application using *Acronychia pedunculata*, *Thespesia populnea* and *Madhuca longifolia* Extracts

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*Acronychia pedunculata*, *Thespesia populnea* and *Madhuca longifolia* are well known medicinal plants that contain anti-inflammatory activity and are widely used in Ayurveda to formulate herbal preparations. This study attempted to determine the anti-inflammatory activity of aqueous and methanolic extracts of *Acronychia pedunculata* leaves, *Thespesia populnea* leaves and bark and *Madhuca longifolia* seeds extracts by using the heat-induced ovalbumin protein denaturation method and Diclofenac sodium as a standard reference. The concentration range of aqueous and methanolic extracts of *Acronychia pedunculata* leaves, *Thespesia populnea* leaves, bark and *Madhuca longifolia* seeds was 25 µg/mL to 400 µg/mL. Topical application was prepared with a concentration range of 0.1% to 0.5% of aqueous and methanolic formulation separately with a weight of 15.0 g. The anti-inflammatory activity of the topical application was checked within the concentration range (0.5mg/mL, 0.25mg/mL, and 0.125mg/mL). The data analysis was carried out using GraphPad Prism 10 (Version 10.2.1). The stability evaluation of the topical formulation was carried out for 30 days at three different temperatures ( $8 \pm 2^\circ\text{C}$ ),  $28 \pm 2^\circ\text{C}$ (RT) and  $40 \pm 2^\circ\text{C}$  with scheduled observations on the 1<sup>st</sup>, 7<sup>th</sup>, 14<sup>th</sup>, and 30<sup>th</sup> days. These observations were based on the physical appearance of the topical formulations, color, odor, homogeneity, texture, phase separation, and pH values. A combination of plant extracts has shown augmented anti-inflammatory activity, and it would be beneficial to incorporate a combination of extracts as a topical application to reduce inflammatory conditions.

**Keywords:** *anti-inflammatory activity, acronychia pedunculata, thesipesia populnea, madhuca longifolia, topical application*