# Evaluation of anti-inflammatory activity of modified topical dosage form based on Ayurveda formulation (Murungadi Lepaya) using *in vitro* methods

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Murungadi lepaya is an Ayurvedic formulation which is used to treat rheumatoid arthritis prepared according to the Ayurvedic pharmacopeia of Sri Lanka using rhizome of *Curcuma zedoaria*, fresh bark of *Crateva adansoni* and *Moringa oleifera*. In our previous study, anti-inflammatory activity of three plant parts mentioned above was evaluated individually and in combination. Objective of this study was to prepare a new gel formulation using combined extract of above plant materials which have higher compliance than a traditional lepaya when apply on skin and evaluate anti-inflammatory activity using egg albumin denaturation assay. Combined freeze-dried extract was prepared according to the ratio of the ingredients used in traditional formulation, Murungadi lepaya 1:1:4(*C. zedoaria*, *C. adansoni* and *M. oleifera*). Using the combined freeze-dried extract, a gel (10 %) was prepared. Using the gel formulation, a Concentration series was prepared (39.0625 µg/ml - 5000 µg/ml) and anti-inflammatory activity was evaluated. Diclofenac sodium gel was used as the standard drug. Then all samples were triplicated for each concentration. UV absorbance of the above samples were measured using 660 nm wavelength. $IC_{50}$ value was calculated. Prepared gel was tested for organoleptic properties, pH, spreadability, homogeneity and centrifugation tests. According to the results of the egg albumin assay prepared gel formulation demonstrated a $IC_{50}$ value of 395.4 µg/ml whereas the standard drug, diclofenac sodium gel demonstrated a $IC_{50}$ value of 411.3 µg/ml. Anti-inflammatory activity of the prepared gel formulation was statistically significant when compared with the standard gel ($p<0.05$) based on ANOVA test results. Prepared gel formulation was transparent, smooth and not sticky, pleasant odour, soft texture and homogeneous. The pH value of the formulation was 6.24 which is in between the range of skin pH. The spread diameter was 4.7 cm. In conclusion, prepared gel formulation shows promising anti-inflammatory activity *in vitro*. Clinical studies are recommended in future.

**Keywords:** Anti-inflammatory, *Crateva adansoni*, *Curcuma zedoaria*, egg albumin denaturation assay, *Moringa oleifera*