



## Formulation and *In-vitro* Evaluation of Topically Applied Curcumin Hydrogel

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**SUMMARY.** The study aims to investigate a transdermal hydrogel formulation containing curcumin, which would attenuate the low bioavailability associated with oral administration of the drug. Carboxy polymethylene was used to develop topical hydrogel formulations of curcumin with different concentrations of penetration enhancers. Rheological properties, drug content, skin irritation, stability and *in-vitro* permeation studies were conducted. Permeation experiments were performed on silicon membrane and excised abdominal rabbit skin using Franz Diffusion Cell. All the prepared hydrogel formulations containing Curcumin showed good consistency, homogeneity, spreadability and has wider prospect for topical preparation. The formulation containing Curcumin (2 % w/w gel) and olive oil (2 % w/w, as enhancer) was found to have good permeation of the drug across artificial skin as well as rabbit skin. The anti-inflammatory activity of 2 % w/w Curcumin hydrogel in the rat hind paw edema model revealed that the drug was delivered to the inflammation site at a controlled rate over a desired period of about 3 h, using carboxy polymethylene as gel forming polymer and olive oil and tween 80 as penetration enhancers.

**KEY WORDS:** Carboxy polymethylene, Curcumin hydrogel, Olive oil, Penetration enhancer, Polysorbate 80 (tween 80).

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