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Formulation and Evaluation of Piroxicam Hydrotropic Starch Gel

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Abstract : Background and introduction: Piroxicam is a nonsteroidal anti-inflammatory drug characterized by low solubility-high permeability used to reduce pain, swelling, and joint stiffness from arthritis. Hydrotropes are a class of compounds that normally increase the aqueous solubility of insoluble solutes. Aim: The objective of the present research study was to formulate and optimize Piroxicam hydrotropic starch gel using sodium salicylate, sodium benzoate as hydrotropic salts, and potato starch for topical application. Materials and methods: The prepared Piroxicam hydrotropic starch gel was characterized for various physicochemical parameters like drug content estimation, pH, tube extrudability, and spreadability; all the prepared formulations were subjected to in-vitro diffusion studies for six hours in 100 ml phosphate buffer (pH 7.4) and determined gel strength. Results: All formulations were found to be white opaque in appearance and have good homogeneity. The pH of formulations was found to be between 6.9-7.9. Drug content ranged from 96.8%-99.4.5%. Spreadability plays an important role in patient compliance and helps in the uniform application of gel to the skin as gels should spread easily; F4 showed a spreadability of 2.4cm highest among all other formulations. In in vitro diffusion studies, extrudability and gel strength were good with F4 in comparison with other formulations; hence F4 was selected as the optimized formulation. Conclusion: Isolated potato starch was successfully employed to prepare the gel. Hydrotropic salt sodium salicylate increased the solubility of Piroxicam and resulted in a stable gel, whereas the gel prepared using sodium benzoate changed its color after one week of preparation from white to light yellowish. Hydrotropic potato starch gel proposed a suitable vehicle for the topical delivery of Piroxicam.

Keywords : Piroxicam, potato starch, hydrotropic salts, hydrotropic starch gel
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