Pharmacokinetic Analysis and Skin Irritation of Transdermal Piroxicam

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Background : This study was performed to evaluate the extent of absorption, other pharmacokinetic properties, and the degree of skin irritation of piroxicam transdermal delivery system (Trast®).

Method : Two transdermal patches of 48mg piroxicam were applied to 12 volunteers for 72 hours. Blood samples were collected serially up to 120 hours and plasma concentrations of piroxicam were analyzed by high-performance liquid chromatographic method. The extent of piroxicam absorption was evaluated by resiclual analysis of piroxican remaining in the patches. Compartment analysis using PCNONLIN program was done to evaluate the pharmacokinetic properties of piroxicam patch such as half-life, amount absorbed duirng initial burst, amount absorbed during maintenance dose etc. Clinical scoring, transepidermal water loss and laser doppler flowmetry were used for the evaluation of the skin irritation of the tested formulations.

Results : The average absorbed amount of piroxicam was 5.14mg± 2.83 per one patch. Peak plasma concentration was 208± 107ng/ml. Initial burst absorbed amount was 1.96± 2.35mg and amount released during maintenance dose was 3.18± 1.84mg. Half life was 50.6± 19.9hours and total AUC was 5.38± 2.65μg/ml · hr. Visual, evaporimetric and laser doppler analysis did not show any significant skin irritation.

Conclusion : These results suggest that newly developed transdermal patch of piroxicam would show excellent skin permeation relevant to efficacy on local application for the corresponding clinical indications.