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In-vitro percutaneous absorption of losartan potassium in human skin and prediction of human skin permeability

Petkar K.C., Kuchekar S.B

Abstract:

This study describes the feasibility of transdermal controlled administration of Losartan potassium (LP) across human cadaver skin. Study also defines the influence of capsaicin, sex and site of application on permeation characteristics and determined an appropriate animal model for human skin permeability. The permeation of LP of various formulations was studied using Keshary-Chein diffusion cell. Optimized controlled formulation (without capsaicin) released 42.17% (±1.85) of LP in 12 hr whereas treatment formulation (with capsaicin 0.028 % w/v) released 48.94% (±1.71) of LP with significant difference on null hypothesis. Influence of sex showed statistically significant difference for permeation of LP through male and female rats, as well as male and female mice across both the abdominal and dorsal sides of the skin ($p<0.05$). Similarly statistically significant differences were noted for permeation of LP across male and female mice abdomen-dorsal, but not for male rat abdomen-dorsal and female rat abdomen-dorsal. Furthermore, in-vitro permeation of LP across human skin was compared with the permeation across rat and mice skins. Male rat and male mice dorsal skin was found to have closer permeability characteristics to human than other skin membranes, but the Factor of Difference values were < 3 for all membranes which were used suggesting the membranes are good models for human skin permeability. In conclusion simple transdermal adhesive patches formulations incorporating high molecular weight of LP can deliver a dose in-vivo and proposed model skin membranes can be utilized for future pharmacokineic and toxicokinetic studies as well as metabolism studies of LP

Keywords:

Transdermal ، Losartan potassium ، rat and mice skin ، Eudragit ، Enhancer

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