In Vitro and In Vivo Evaluation of Drug Release from Semisolid Dosage Forms

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Semisolid products are 8–10% of dosage forms, but – in contrast with the solid dosage forms – we do not have any validated method for their drug release in any Pharmacopoeia. Kinetics of release process and its critical factors in case of 1% diclofenac sodium containing hydrogel, organogel, gel emulsion, o/w and w/o creams were observed under in vitro conditions. Comparison of results between Franz diffusion cell and paddle over disk method was made using synthetic cellulose acetate membrane soaked in buffer solution or in isopropyl myristate. In vivo studies were carried out on male Wistar rats; the carrageenan paw edema decreasing effect of 12 different formulations was measured in comparison with a control group. All products reduced paw edema in rats, although we found significant differences among them both in vitro and in vivo.

Fig. 1. In vitro drug release and penetration of 1% diclofenac sodium containing 1% Carbomer 934 P gel (DC1)

Fig. 2. In vivo paw edema test of 1% diclofenac sodium containing 1% Carbomer 934 P (DC1)