

Comparative *in vitro* dissolution and *in vivo* bioequivalence of two diclofenac enteric coated formulations

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Background and Aims: The aim of this study was the comparison of *in vitro* dissolution and *in vivo* bioavailability of two different brands of diclofenac sodium (CAS 15307-86-5) enteric coated tablets in healthy male Iranian volunteers in a single-dose, randomized, open-label, blind study, which was conducted according to a crossover design in healthy volunteers. A washout interval of two weeks was selected between administrations to each subject in this study. Serial venous blood samples over 10 hours after each administration to measure diclofenac sodium concentration in serum were obtained, and placed into tubes containing sodium heparin. Then the plasma was separated and kept frozen at -20 °C for subsequent analysis with a modified HPLC method with UV detection. In addition, the *in vitro* dissolution study was performed on the brands. For the test and reference formulation, mean C_{max} values were 2257.3 (ng/ml) and 2156 (ng/ml) respectively. The mean AUC_{0-10h} were 5726.1 (ng.h/ml) and 5917.8 (ng.h/ml) for the test and 5689.9 (ng.h/ml) and 5967.4 (ng.h/ml) for the reference formulation respectively. Results show that the 90% confidence intervals for the ratio of test and reference products in C_{max} (101.4-114.9%), AUC_{0-10h} (96.3-109.1%) and AUC_{0-∞} (94.7-107.3 %) were all within the 80–125% interval proposed by the FDA and EMA. Both formulations released > 80% of drug within 30 minutes in buffer pH=6.8 medium. Therefore the diclofenac sodium enteric coated tablets of the test and reference formulations are bioequivalent in terms of rate and extent of absorption.

Keywords: Diclofenac; AUC; Bioavailability; Bioequivalence