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Fabrication of Diclofenac sustained release tablets using microencapsulation-coacervation technique: Release characterization and *in-vivo* evaluation

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The study was aimed to develop a sustained release formulation of diclofenac sodium (DFS) using ethyl cellulose (EC) as retardant through microencapsulation-coacervation and its *In-vitro* & *In-vivo* evaluation. Three formulations of microcapsules with varying proportions of DFS and EC were prepared and compressed into tablets. *In-vitro* analysis showed that prepared tabletted microcapsules F2 (1:2) released the drug over 12 hours and the release profile was comparable with reference product (Voltral® SR). The release kinetic models were fitted to characterize the dissolution profiles of microcapsules and tabletted microcapsules.

The prepared tablets (F2) and reference product were administered to eighteen healthy human subjects. The blood samples were collected at 0.0, 0.30, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 6.0, 8.0,10 and 12.0 hours after the administration of DFS tablets. The assay was performed using simple, sensitive and rapid RP-HPLC method. The values of AUC, C_{max}, T_{max} and $t_{1/2}$ were determined for F2 and Voltral® SR, respectively using Kinetica® PK/PD version 4.4.

No significant difference was found in pharmacokinetic parameters of F2 and Voltral® SR. The sustained release diclofenac sodium tablets were prepared by coacervation process using cost effective polymers having comparable *In-vitro In-vivo* characteristics to renowned reference product.

Biography

Mahmood Ahmad has completed his Ph.D. from University of Punjab, Pakistan in 1991. He is Dean, Faculty of Pharmacy and Alternative Medicine, The Islamia University of Bahawalpur-Punjab, Pakistan. He is the author of more than 100 scientific International and National publications in reputed journals. He is also author of three books in the fields of Pharmacokinetics and Drug Delivery Systems. He has honored with Best Teacher Award-2009 by the Higher Education Commission of Pakistan.