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Preparation and *in-vitro* evaluation of meloxicam co-ground mixtures

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Meloxicam is a non-steroidal anti-inflammatory drug of the oxicam class, used to relieve the symptoms of dental pain, arthritis, etc. Meloxicam inhibits cyclooxygenase (COX) synthesis. It is characterized by dissolution-limited bioavailability. Co-grinding of poorly water soluble drug (Meloxicam) particles with different hydrophilic polymers like PEG and / or PVP-K25 resulted in the formation of amorphous powders having enhanced drug solubility and dissolution properties. According to percentage of drug dissolved, dissolution rate of MLX – PEG co-ground binary mixture prepared by ball mill or vibrational mill > MLX – PEG – PVP co-ground ternary mixture > MLX – PVP co-ground binary mixture > MLX – polymer physical mixture > MLX alone. Co-ground mixtures prepared with ball mill have a relatively higher dissolution rate than those prepared with vibrational mill. An increase in the concentration of carrier in the co-ground blends resulted in an increase in the dissolution rate of MLX. The enhancement of dissolution of MLX from co-ground mixtures could be due to the reduction of crystalline nature of the drug in co-ground mixtures. Co-ground mixture of MLX and PEG in 1:4 ratio by ball mill showed the best results in terms of extent and rate of dissolution in water and phosphate buffer. This effect was not only due to particle size reduction, but also loss of crystalline nature of the drug during co-grinding. DSC and PXRD studies indicated that crystalline nature of drug was reduced after co-grinding with PEG and / or PVP as compared to their corresponding physical mixtures.

Biography

Aly H Nada, BPharm, MSc, PhD, is currently the Chairman of Pharmaceutics Department, Kuwait University. He joined the Faculty of Pharmacy in 2002 and he is involved in teaching many pharmaceutics courses for both undergraduate such as: Formulation and evaluation of liquid and solid dosage forms, Biopharmaceutics, Industrial Pharmacy, Cosmetics. He is serving as reviewer for many pharmaceutical journals and scientific organization, e.g. *European Journal of Pharmaceutics and Biopharmaceutics*, *Drug Development and Industrial pharmacy*, *AAPS*. He has published more than 50 peer reviewed articles and contributed in more than 100 conferences and meetings.

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