COVID-19 Information Public health information (CDC) Research information (NIH) SARS-CoV-2 data (NCBI) Prevention and treatment information (HHS) Español

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## Development of meloxicam formulations utilizing ternary complexation for solubility enhancement

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## Abstract

Meloxicam (an oxicam derivative), a relatively new cyclo-oxygenase inhibitor, is a member of enolic acid group of non-steroidal anti-inflammatory drugs. It is generally used in the treatment of rheumatoid arthritis, osteoarthritis and other joint pains. Meloxicam is practically insoluble in water (8µg/ml), which directly influences the C(max), T(max), as well as the bioavailability of the drug. In the present study, an attempt has been made to improve the dissolution of Meloxicam by preparation of its solid dispersion using  $\beta$ -cyclodextrin blended with various water soluble polymer carriers i.e., HPMC (methocel IH), methylcellulose (400cps), PVP K30, HPMC (K(4)M), HPMC (50cps). It is reported that when small amount of water soluble polymer is added to β-cyclodextrin, its nature of solubilization significantly increases due to increase in the apparent complex stability constant. Phase solubility studies were carried out to evaluate the solubilizing power of  $\beta$ -cyclodextrin along with various water soluble polymers. The solid dispersion was prepared and formulated into tablets and suspension, which were evaluated on the basis of various official tests. All the studies suggest that formulations of Meloxicam utilizing solid dispersion technique significantly enhances solubility (90  $\mu$ g/ml) of the drug and results in superior formulations of the drug by using  $\beta$ -cyclodextrin blended with 0.12% w/w HPMC (Methocel IH). Ternary complexation is a valuable tool for solubility enhancement of drugs.

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