



# SOLID DISPERSIONS AS A TOOL TO ENHANCE SOLUBILITY OF CHLORZOXAZONE

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## Abstract:

Chlorzoxazone belongs to BCS class II with prominent diminished solubility. The drug owing to low solubility has a marked poor bioavailability as maximum of it is rendered to the metabolism by CYP2E1 enzyme in the liver. The main purpose of the work is to enhance the solubility of the drug through the formulation of solid dispersions. Various methods like Co-grinding, Co-precipitation, Fusion method, and Closed melting method were used to formulate the Solid Dispersions. The Solid Dispersions were characterized for in-vitro drug release for F1 (Fusion 1), F2 (Fusion 2) C1 (Closed Melting 1), C2 (Closed Melting 2), Co-P (Co-precipitation), Co-G (Co-grinding). Based on drug release profile and solubility studies the formulation made by the F2 (Fusion method) with the drug, polymer ratio (0.5:1.0) was obtained with best results among all. The results showed that the dispersions has a negligible interaction in transformation from crystalline to amorphous state.

Keywords: Chlorzoxazone, Solid Dispersions, solubility

## 1. INTRODUCTION

Chlorzoxazone is a muscle relaxant that acts centrally. It is used to treat severe muscle spasms caused by fibrositis, bursitis, myositis, spondylitis, sprains, and muscle strains Padmajaudaykumar et.al [17]. Chlorzoxazone is classified as a BCS class II substance. The low aqueous solubility of BCS Class II medications poses a significant problem for the development of oral dosage forms Brahmankar D.M et.al [4]. Chlorzoxazone is metabolized by the CYP2E1 enzyme in the liver which gets converted to its inactive metabolite 6-Hydroxychlorzoxazone after metabolism which leads to a decrease in the bioavailability of a drug. Moqbel HA et.al [15]. Solubility is a major parameter that directly affects the bioavailability of the drug due to which the pharmacological response also affected Warikar SM et.al [24], Giliyar C [7], Hoerter D [8]. All the drugs with crystalline nature show the aqueous solubility problems Sethia S et.al [22], Rustichelli [21].

Solid dispersions is a solubility enhancement technique in which crystalline form converts to its amorphous form. Jadhav et.al [9]