



## ENHANCEMENT OF PIOGLITAZONE HYDROCHLORIDE SOLUBILITY THROUGH LIQUISOLID COMPACT FORMULATION USING NOVEL CARRIER NEUSILIN US2

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### ABSTRACT

Main objective behind formulating any dosage form is to develop the optimized and stable dosage form from which will release the drug fastly in conventional formulations. Various approaches such as, solid dispersion, crystal engineering, ball milling, complexation, and self-emulsifying drug delivery systems have all been used in recent research to increase the solubility of the drug, but the liquisolid compact has demonstrated superior results for enhancing dissolution. In most of the cases absorption of drug is less which is due to various factors one of the most important factor is drug solubility. Liquisolid compacts are a novel and promising addition to such a novel goal because the liquisolid technology has been successfully used to treat low-dose poorly soluble drugs. A thiazolidinedione, pioglitazone HCl is primarily prescribed to type 2 diabetics as an anti-hyperglycemic medication. Compared to traditional carrier materials, Neusilin US2 performs better as a carrier material in liquisolid compact. Drugs from BCS Class II can be easily formulated using liquisolid compact by the simple blending method. A drug having a low dose can be formulated by this method.

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### Introduction

The efficacy of the drug depends on the availability of bioavailability depending on the melting of the drug cells. One of the most crucial factors in achieving the desired drug concentration in the distribution system to reflect the drug response is solubility. Drugs with a low solubility in water will ordinarily release at a slower rate due to their low solubility in GI content. The dissolution rate is the process that determines how quickly drugs are absorbed. To speed up the rate of dissolution, drugs that are poorly water soluble are in demand. Contrarily, this enhances bioavailability and absorption. There are ongoing developments in formulation techniques for improving poorly soluble substances' dissolution [1].

Liquisolid compacts are one of the most innovative and promising approaches to encourage the eradication of water-insoluble medications among them. Liquisolid compacts are pills or tablets that release immediately or continuously after being swallowed, along with the addition of any necessary adjuvants for tablets or encapsulating them [2].

With a neutral pH, Neusilin® US2 is a synthetic, amorphous magnesium aluminum oximetasilicate that can be utilized for both wet granulation and direct compression of solid dosage forms [3].

Only if a maximum liquid load on the carrier material is not exceeded can one obtain an acceptable flowing and compressible liquid-solid system depending on the excipient ratio (R) of the powder substrate. The weight ratio of the liquid formulation (W) and the carrier material (Q) in the system is known as the "liquid/carrier ratio" or "liquid load factor" (Lf [w/w]) [4]:

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