

## Research Article

# Formulation Development and Evaluation of Fast Disintegrating Tablets of Salbutamol Sulphate, Cetirizine Hydrochloride in Combined Pharmaceutical Dosage Form: A New Era in Novel Drug Delivery for Pediatrics and Geriatrics

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The objective of the present study was to prepare the fast disintegrating tablet of Salbutamol Sulphate, Cetirizine Hydrochloride in combined tablet dosage form for respiratory disorders such as bronchitis, asthma, and coughing for pediatrics and geriatrics. The tablets were prepared by direct compression technique. Superdisintegrant such as Sodium Starch Glycolate was optimized as 4% on the basis of least disintegration time. Different binders such as MCC and PVP K-30 were optimized along with optimized superdisintegrant concentration. 1% MCC was selected as optimum binder concentration on the basis of least disintegration time. The tablets were evaluated for hardness, friability, weight variation, wetting time, disintegration time, and drug content uniformity. Optimized formulation was further evaluated by *in vitro* dissolution test, drug-excipient compatibility, and accelerated stability study. Percent weight variation and content uniformity were within the acceptable limit. The friability was less than 1%. The wetting time and disintegration time were practically good for all formulations. FTER studies and accelerated stability study showed that there was no interaction between the drug and excipients. It was concluded that, by employing commonly available pharmaceutical excipients such as superdisintegrants, hydrophilic and swellable excipients and proper filler, a fast disintegrating tablet of Salbutamol Sulphate, Cetirizine Hydrochloride in combined tablet dosage form, were formulated successfully with desired characteristics.

## 1. Introduction

Fast disintegrating tablets (FDTs) have received ever-increasing demand during the last decade, and the field has become a rapidly growing area in the pharmaceutical industry. Recent advancements in novel drug delivery system (NDDS) aim to enhance safety and efficacy of drug molecule by formulating a convenient dosage form for administration in order to achieve better patient compliance. One such approach is "fast disintegrating tablet." Many patients find it difficult to swallow tablets and hard gelatin capsules that results in high incidence of noncompliance and ineffective therapy [1, 2]. Fast disintegrating drug delivery systems

(FDDDS) are a new generation of formulations which combine the advantages of both liquid and conventional tablet formulations and, at the same time, offer added advantages over both traditional dosage forms. They provide the convenience of a tablet formulation and also allow the ease of swallowing provided by a liquid formulation [3]. The concept of fast dissolving/disintegrating tablets emerged from the desire to provide patients with more conventional means of taking their medication when drinking water is not available and in certain cases such as motion sickness, sudden episodes of allergic attacks, or coughing. Particularly these types of difficulty are faced by pediatric and geriatric patients [4]. Recent developments in technology have

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