ORIGINAL ARTICLE

DESIGN AND *IN VITRO* EVALUATION OF ACRIVASTINE AS ORODISPERSIBLE TABLET USING DIRECT COMPRESSION METHOD

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ABSTRACT

The aim: This study aimed to develop mouth-dissolving tablets of Acrivastine, an antihistamine medication, in order to increase its oral bioavailability.

Materials and methods: Different super disintegrants, such as crospovidone, croscarmellose sodium, and sodium starch glycolate, were used to make Acrivastine oral dispersible tablets (ODTs). These super disintegrants were utilized in various concentrations. The formulation (F3) with 6% w/w crospovidone had a fast disintegration time (less than 30 seconds) and practically total drug release within 10 minutes. All of the formulations were made using the direct compression method and proper diluents, binders, and lubricants. Fourier transform infrared spectroscopy (FTIR) tests were used to investigate the drug-excipient interaction, and all formulations demonstrated improved drug-excipient compatibility.

Results: The average weight of all formulations was between 175 and 180 mg. All formulations' hardness and friability were within acceptable ranges. Direct compression tablets had a hardness of 3.2 to 4 kg/cm2. All formulations were determined to have a friability of less than 1.0%. For oral dissolving tablets, the *in vitro* disintegration time is critical, and this time preferred to be < 60 seconds. The results also showed that crospovidone disintegrated after 24 seconds and sodium starch glycolate disintegrated in 40 seconds *in vitro*.

Conclusions: When compared to croscarmellose sodium and sodium starch glycolate, crospovidone performs better as a super disintegrant. In comparison to other formula, tablets breakdown in the mouth in 30 seconds and have a maximum *in vitro* drug release time in 1-3 minutes.

KEY WORDS: super disintegrants, oral dispersible tablets, crospovidone, disintegration time

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INTRODUCTION

Despite notable developments in drug delivery technology, the oral route for drug administration remains popular due to exact dosage, low therapy costs, self-medication, non-invasive technique, and convenience of administration, all of which contribute to good patient compliance [1]. Elderly persons, children, and some patients, on the other hand, may have difficulty swallowing pills or firm gelatin capsules. Furthermore, such challenges affect not just patients, but also other working persons who do not have access to water. Tablets that disintegrate quickly in the mouth can be used to treat these issues. Oral solid dose forms (ODTs) are oral solid dosage forms that breakdown quickly in the mouth, releasing the medication. They contain super disintegrants, which assist dissolve the ODT in three seconds (s) to three minutes (min) without the use of water [2]. This makes ODTs beneficial to a variety of patient demographics, including geriatrics, and promotes their compliance [3]. Because some medications are absorbed from the mouth, pharynx, and esophagus as saliva flows down into the stomach, some oral dispersible tablets claim to have higher bioavailability than regular tablets. In such circumstances, the drug's bioavailability is much higher than it is in the traditional tablet dose form [4-7]. The taste and disintegration time are the two most important characteristics to consider while creating an ODT. Direct compression ODT formulations often contain high quantities of a super disintegrant to achieve rapid disintegration. The quantities of super disintegrant employed in the formulation might range from 10-20 wt percent of the formulation, depending on the quantity and features of the active pharmaceutical ingredient (API) and the intended release profile. Choosing the best super disintegrant is crucial when constructing an ODT formulation for direct compression. Although the super disintegrant