



RESEARCH PAPER

# SUMATRIPTAN SUCCINATE LOADED MICROSPHERES CONTAINING COMPRESSED CORE TABLETS FOR EFFECTIVE TREATMENT OF MIGRAINE

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**Migraine has long been regarded as a vascular disorder because of the throbbing nature of the pain. Most patients with migraine require pharmacologic treatment. In the present research work sumatriptan succinate is used in the form of compressed core tablets *via* oral route of administration for effective treatment of migraine. The aim of this study was to reduce the dosing frequency and avoid hepatic first pass metabolism by preparing sumatriptan succinate loaded alginate microsphere. The microspheres were prepared by emulsification method. The prepared microsphere were characterized by scanning electron microscopy, and evaluated for different parameters like particle size, entrapment efficiency, polydispersity index, surface charge and *in vitro* drug release. The microsphere loaded compressed core tablets were prepared by direct compression method, where the drug loaded microsphere was present in the core of tablet. Further the outer coating layer was applied on the core of tablet that contains plain sumatriptan succinate to immediate release and provides instant relief from migraine symptoms. The formulations were evaluated for various parameters as well as *in vitro* drug release and compared with plain sumatriptan succinate loaded compressed core tablet. The *in vitro* drug release showed immediate drug release within 2 min from outer coating layer as well as sustained drug release for up to 24 h from core of tablet. It is concluded that the formulation provide instant as well as delayed release of drug to migraine patient which can decrease the dosing frequency and increase patient compliance.**

**Key words:** Migraine, Sumatriptan succinate, Core tablet, Microsphere, Orodispersible layer.

## INTRODUCTION

Migraine is a complex neurobiological disorder that has been recognized since antiquity. The core features of migraine are headache, which is usually throbbing and often unilateral, and associated features of nausea, sensitivity to light, sound, and exacerbation with head movement (Silberstein *et al* 2002). Headache is one of the most common medical complaints in migraine. Preventive treatments for patients with migraine headache, reduce the frequency, severity, and duration of headaches (Rubingh *et al* 2007). The

pain of migraine headaches usually begins gradually and intensifies over a period of minutes to hours and can be aggravated by light or sound, constant motion, or any physical activity. These headaches usually last from 4 to 48 h and can be relatively mild to severe (Russo, 1998). Symptoms that accompany the intense headache such as blurred vision or blind spots, sweating, runny or blocked nose, fatigue, nausea and vomiting, loss of appetite, numbness, tingling, problems in concentrating, sensitivity to light, sound, or smells etc (Villalon *et al* 2002).