



Development and *In Vitro* Evaluation of Ceramic Nanoparticles of Piroxicam

Pavani VENGALA ^{1,2*}, Sana ASLAM ² & C.V.S. SUBRAHMANYAM ²

¹ *Jawaharlal Nehru Technological University, Hyderabad, A.P, India.*

² *Department of Pharmaceutics, Gokaraju Rangaraju College of Pharmacy, Hyderabad, A.P, India.*

SUMMARY. The objective of the present study was to prepare ceramic nanoparticles of a poorly aqueous soluble drug (piroxicam) to explore the relationship between particle size and dissolution profile. Ceramic nanoparticles were prepared by self-assembling of hydroxyapatite using colloidal precipitation technique, with the aid of refluxing. Then the nanoparticles were coated with trehalose (polyhydroxyl oligomer) and subsequently piroxicam was allowed to adsorb. These ceramic nanoparticles were characterized for the shape, size, size distribution, yield, drug loading and release profile. The SEM analysis indicated spherical particles with a particle size median of 238 nm. The percent yield of ceramic nanoparticles was 66.7 %. The dissolution profile of piroxicam aquasomes was obtained in 0.1 mol/L hydrochloric acid solution. The release of piroxicam from ceramic nanoparticles was linear and exhibited zero order kinetics. Studies indicated that the piroxicam ceramic nanoparticle formulations elicited release of piroxicam in 1 h 15 min. This result also indicated specific interaction of piroxicam and trehalose. In the absence of sugar adsorption, the piroxicam release was to the tune of 90% in 60 min., which can be usefully exploited for the immediate action.

KEY WORDS: Ceramic nanoparticles, Colloidal precipitation, Oral delivery, Piroxicam, trehalose.

* Author to whom correspondence should be addressed. *E-mail:* pavani181@gmail.com