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Nanotechnology in Pharmacological use Pharmacokinetics and Oral Bioavailability of Omeprazole Nanosuspension after Oral Administration on Single- and Multiple-Dose Regimens to *Sprague-Dawley* Rats

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Nanosuspension is a universal formulation method for poorly water-soluble drugs to overcome gastrointestinal barriers and improve oral bioavailability. This study was designed to quantitate and compare in the *Sprague-Dawley* rat the pharmacokinetics and oral bioavailability of nanosized omeprazole suspension after single-dose (20 mg) and multiple-dose (20 mg every 24 hr. for five doses) administrations in comparison with micronized omeprazole suspension. Plasma pharmacokinetic response of omeprazole was measured following intragastric gavage. Serial blood samples were collected and plasma drug concentrations were measured using High-Performance Liquid Chromatography. The time course of omeprazole in the plasma of all rats was best explained by a one-compartment model. In contrast to that observed with the micronized suspension, the nanosuspension had a faster onset of action with an improvement of oral absorption and bioavailability after single-dose and multiple-dose administration in rats. Administration of a multiple-dose of the omeprazole nanosuspension resulted in considerable increases in the maximum plasma levels of the drug compared to those observed after a single administration of omeprazole nanosuspension. The potentiating effects of the particle size reduction on omeprazole absorption persisted on multiple dosing.

Keywords: omeprazole nanosuspension, single and multiple doses, Pharmacokinetics, oral bioavailability, Sprague-Dawley Rats

Biography:

I've spent the 11 years learning everything there is to know about pharmacy from clinical to industrial. I'm currently applying this knowledge in my researches. I've held a number of scientific presentations and publish few articles. My research interests encompass the structure-bioavailability relationships exhibited by nanocomposites, and the selection of beneficial properties in polymers, nanoparticles, and their resulting composites. Specifically, I am driven to investigate the areas of drug nanocomposites, tuning and retention of unique nanoparticle physical properties in composites, and investigating its biological and physical activity.

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