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Rosuvastatin nanocrystals: Its preparation, characterization, and *in vitro - in vivo* evaluation

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Nanotechnology will affect our lives tremendously over the next decade in very different fields, including medicine and pharmacy. Transfer of materials into the nanodimension changes their physical properties which were used in pharmaceutics to develop a new innovative formulation principle for poorly soluble drugs: The drug nanocrystals. The purpose of this research was to study whether the bioavailability of Rosuvastatin Calcium (RST) and its bioavailabilty could be improved by administering Rosuvastatin Calcium entrapped in Nano-carrier. Rosuvastatin Calcium (RST), a poorly water-soluble 3-hydroxy3-methyl glut aryl CoA (HMG-CoA) Reductase inhibitor, a potent lipid-lowering agent, and is used as hypolipidemic agent. It is also used in the treatment of osteoporosis, benign prostatic hyperplasia, and Alzheimer's disease. RST is crystalline nature so it reduces its aqueous solubility and finally that results in an oral bioavailability of 20%. Thus, the objective of this study was to improve the solubility and dissolution rate of RST. Both differential scanning calorimetry and X-ray diffraction analysis indicated that RST was present in crystalline form. The *in vitro* dissolution rate of the nanocrystals was significantly increased compared with the physical mixture and commercial tablet. The *in vivo* testing demonstrated that the C_{max} of the nanocrystals was approximately 15-fold and 10-fold greater than that of physical mixture and commercial tablet, respectively. In addition, the AUC0→24 of the nanocrystals was approximately 40-fold and 9-fold greater than that of physical mixture and commercial tablet, respectively.

Biography

Arvind Sharma has completed his M pharmacy from Punjabi university, Patiala, Punjab, India and persuading Ph.D. from Chitkara University Punjab India. Presently he is working as Assistant Professor (pharmaceutics) in Chitkara College of pharmacy. He has published more than 30 papers in reputed journals and attended more than 25 national and international conferences and supervised 16 M Pharmacy students for their research work.

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