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## Studies on the synthesis and characterization of nano suspension of hydrophobic drugs, particularly Nimesulide, to increase their gastrointestinal solubility

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Nearly 40% of the new drug entities synthesized by the pharmaceutical industry is mostly insoluble in water. Thus the patients are forced to take drugs in high doses and more frequently to attain the desired bioavailability of the drug. Hence gastrointestinal (GI) solubility is an essential parameter in the development of a new drug. Much research has been done on this field aiming at increasing the kinetic as well as the absolute solubility of the drug. Methods like complexation of the drug with hydrophiles / amphiphiles, crystal engineering, and freeze-drying are the significant methods adopted. In addition to these methods, particle size reduction, in particular, synthesis of nanosuspension or nanodispersion of the drug is a very practical and economical method. The particle size is reduced either by milling or by the preparation of nanosuspension. This work focuses on the preparation and characterization of Nimesulide nanosuspension by high-pressure homogenization of the drug-surfactant mixture. Nimesulide is NSAID which works by the inhibition of proinflammatory COX-2 enzymes. The drug has been shown to cause severe liver damage and sometimes death due to its high dosage and residence time in the liver. Nanosuspension of Nimesulide is prepared by combining it with different stabilizers (steric and electrostatic). The stability of the drug nanosuspension is determined by measuring the agglomeration of the nanoparticle. The size, morphology and homogeneity of the nanosuspension is characterized by electron microscopy.

### Biography

Syed Hadi Hasan joined Department of Chemistry, Institute of Technology (BHU) as a Lecturer in 1993. He became Sr. Lecturer in 1997 and Associate Professor in 2002. Since 2008, he is a full time Professor at IIT-BHU. He has published close to 100 research papers and several Book Chapters in journals of international reputation. He also has around 50 publications in Conferences & Seminars of International and National reputation. He also serves as a reviewer for many reputed journals including Elsevier and Springer. He has supervised to completion seven PhD fellows and thirteen M. Tech students.

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