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Bioavailability enhancement using submicron particles

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Statement of the Problem: Many compounds exhibit low oral bioavailability due to poor dissolution *in-vivo.* The poor dissolution is typically due to low water solubility, and improving oral bioavailability of poorly soluble compounds has been a focus of formulation development for many years. Advancements which have been successful include particle size reduction, SEDDS and amorphous solid dispersions.

Objective: The objectives of this session are to review the current tools available for oral bioavailability enhancement with a focus on particle size reduction, and to introduce a new tool, SoluMatrix Fine Particle Technology™.

Methodology: Drug substance particles can be milled to the submicron size utilizing wet media milling or dry attritor milling. With the dry milling method, the drug substance is milled with excipients and media to produce a free-flowing powder containing submicron particles of the drug substance.

Findings & Conclusions: Multiple case studies demonstrate that submicron particles can improve dissolution and the pharmacokinetics of orally administered poorly soluble drugs. Benefits included increased oral bioavailability, reduction in food effect, more rapid absorption, and thermodynamic stability.

Biography

Maura Murphy is a Formulation Development Scientist, specializing in solid dosage form development of poorly soluble small molecules. She graduated from the University of Texas with a BS in Pharmacy, and the University of Maryland at Baltimore with a PhD in Pharmaceutical Sciences. She has nearly 20 years of product development experience, having worked at Schering-Plough, Genzyme, Verte, and Pharmaceutics International before her current position as the Senior Director of R&D at iCeutica.

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