Coatings That Inhibit Crystallization of Amorphous Drugs to Improve Stability

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method of coating amorphous drugs to improve their stability and maintain their solubility.

OVERVIEW

Many drugs that are potentially efficacious for treating diseases, such as cancer, have limited usefulness because they are relatively insoluble. Preparing these drugs in an amorphous, or “glassy,” form improves their solubility and bioavailability.

However, they are less stable in this form. Most amorphous drugs crystallize over time, negating their advantages. Typically, amorphous drugs begin crystallizing on the surface, and then the remaining solid reforms into the crystalline form.

THE INVENTION

UW-Madison researchers have developed a method of coating amorphous drugs to inhibit surface crystallization and improve their stability. An ultra thin polyelectrolyte coating or other biocompatible immobilizing material is applied to the surface of an amorphous solid. This coating allows amorphous pharmaceuticals to maintain their amorphous state, and therefore their solubility, over extended periods of time.

APPLICATIONS

• Stabilizing amorphous drugs

KEY BENEFITS

• Increases stability of amorphous drugs
• Allows amorphous drugs to maintain their solubility for longer periods of time
• Allows for coating to be sufficiently thin so it does not affect the dissolution rate of the coated pharmaceutical
• May improve the wetting ability, aqueous dispersibility and powder flow of the coated pharmaceutical

THE WARF ADVANTAGE

WARF: A Leader in Technology Transfer Since 1925
Since its founding as a private, nonprofit affiliate of the University of Wisconsin–Madison, WARF has provided patent and licensing services to UW–Madison and worked with commercial partners to transform university research into products that benefit society. WARF intellectual property managers and licensing staff members are leaders in the field of university-based technology transfer. They are familiar with the intricacies of patenting, have worked with researchers in relevant disciplines, understand industries and markets, and have negotiated innovative licensing strategies to meet the individual needs of business clients.

The University of Wisconsin and WARF – A Single Location to Accelerate Translational Development of New Drugs
UW–Madison has the integrative capabilities to complete many key components of the drug development cycle, from discovery through clinical trials. As one of the top research universities in the world, and one of the two best-funded universities for research in the country, UW–Madison offers state-of-the-art facilities unmatched by most public universities.

These include the Small Molecule Screening Facility at the UW Comprehensive Cancer Center; the Zeeh Pharmaceutical Experiment Station, which provides consulting and laboratory services for developing formulations and studying solubility, stability and more; the Waisman Clinical Biomanufacturing Facility; the Wisconsin Institute for Medical Research, which provides UW–Madison with a complete translational research facility; and the innovative, interdisciplinary Wisconsin Institutes for Discovery, home to the private, nonprofit Morgridge Institute for Research and its public twin, WD, part of the university’s graduate school. The highly qualified experts at these facilities are ready to work with you to create a library of candidates for drug development.
drug

• Coating is simple, cost-effective and applicable to many amorphous pharmaceuticals.
• Does not require the use of surfactants or other components that may be poorly tolerated

STAGE OF DEVELOPMENT

This coating was successfully used to stabilize indomethacin, an anti-inflammatory drug, and nifedipine, a calcium channel blocker.

ADDITIONAL INFORMATION

Related Technologies
See WARF reference number P06430US for a novel method of creating stable glasses using vapor deposition.

Publications


Tech Fields
Drug Discovery - Drug delivery

CONTACT INFORMATION

For current licensing status, please contact Rafael Diaz at rdiaz@warf.org or 608-960-9847.