Drug Discovery & Development

Solid Compositions for Production of Micelles for Drug Delivery

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Inventors: Glen Kwon, Morteza Rasoulianboroujeni, Rae Hyung Kang

The Invention

UW-Madison researchers have developed a method for producing drug-loaded PEG copolymer micelles through crystalizing PEG in the presence of an amorphous copolymer and the hydrophobic drug. This process yields a solid form of the mixture that forms drug-loaded copolymer micelles when hydrated. The crystallization is done using a supersaturated solution of PEG. This solid mixture can be stored for at least 30 days with ongoing studies suggesting stability will be longer than that. When needed, the solid form can be hydrated to create drug-loaded micelles. The researchers used paclitaxel as the drug and PEG-PLA as the co-polymer micelle in their proof-of-concept work. They explored the impact of cooling rate, molecular weight of PEG used as the solvent, and whether glass versus plastic reaction vessels impacted crystallization and found cooling rate had little effect while using glass vessels prevented crystal formation. The molecular weight of the PEG solvent has to balance the enhanced solubility of PEG in higher molecular weight PEG (preventing crystallization) with a need for an adequate solubility to get the hydrophobic drug into solution (higher molecular weight PEG has a better solubility profile).

Additional Information

For More Information About the Inventors

- Glen Kwon

Tech Fields

- Drug Discovery & Development : Drug production & design

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