TECHNOLOGY SUMMARY

In Situ Self-Assembling Nanoparticles for Drug Formulations

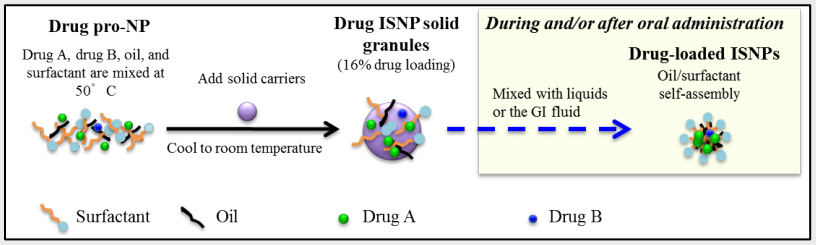
Platform Pro-Nanoparticle™ Technology

Description:

Researchers at University of North Texas Health Science Center have developed a platform nanoparticle technology offering improved drug loading and enhanced bioavailability for solid dosage drug formulations. Novel nanotechnology produces stable drug-loaded *in situ* self-assembling nanoparticles (ISNP™) when introduced into water. By avoiding the use of water in preparation of pro-nanoparticle™, drug loading is increased, long-term drug stability is enhanced, and solid dosage forms can be manufactured that form ISNPs™ upon contact with water or other fluids, such as gastrointestinal fluid. The ISNPs™ also improve the taste of drugs. The platform nanotechnology has broad applicability and can be utilized to enhance bioavailability of BCS II, BCS III and BCS IV drugs. The technology can be used for formulation of oral solid dosage drugs, suspensions for parenteral administration, and fixed-dose combinations. The ISNP™ nanotechnology has been demonstrated in the formulation of HIV protease inhibitors and chemotherapeutic agents. In pilot studies, the formulations were proven to have improved bioavailability and biodistribution in rats.

Market Need:

There is an urgent need for improved oral solid dosage forms and sustained release drug delivery systems. The drug delivery market was estimated at over $1 trillion in 2015. Growth in the market is driven by the rising prevalence of chronic diseases, growth of the biologics market, new product launches, and technological advancements in maximizing drug delivery and efficiency at target sites. Nanotechnology will continue to contribute to the overall market with nanotechnology-enabled drug delivery technologies expected to generate almost $140 billion in market value by 2021 with nanocarriers accounting for 40 percent of the market.



Benefits and Advantages:

- Novel pro-nanoparticle™ approach improves drug loading and stability in solid dosage formulations
- Increase bioavailability for BCS II, BCS III and BCS IV drugs
- Provide a platform to circumvent the first-pass effects for drugs
- Suitable for oral disintegrant tablets, parenteral drug formulations and fixed-dose combinations
- Mask poor taste of drugs; for palatable pediatric/geriatric formulations
- Simple, scalable manufacturing process
- Demonstrated to be a promising platform for fixed-dose combination products (e.g., antiretrovirals LPV/RTV, Journal of Controlled Release (2016))

"ISNP™ nanotechnology offers improved palatability, stability, drug loading, and bioavailability in solid dosage formulations"

Technology Status:	Tech 2015-013. Available for licensing or collaboration.
Intellectual Property:	Patent Pending
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ADDITIONAL INFORMATION

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