AVAILABLE TECH

Inulin-lipid Hybrid (ILH) Technology

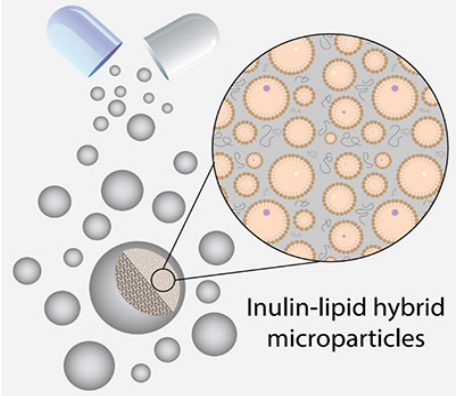
Dry powder formulation that affords high drug and lipid stability through the micro-encapsulation approach.

Benefits

- Improves poorly water soluble drug solubilisation and dissolution.
- Proven ability to enhance oral bioavailability.
- Induces positive changes to gut microbiota.
- Longer shelf life in comparison to liquid-lipid based formulations.
- Can be formulated into wide range of pharmaceutical dosage forms.

Background

Inulin-lipid hybrids (ILH) are a novel micro-encapsulation technology that afford the ability to encapsulate poorly water soluble drugs within their lipophilic core. The drug-loaded lipid nanoparticles are encapsulated within a three-dimensional solid-state matrix comprised of inulin polysaccharide chains. Owing to the unique bio-activities afforded by inulin (a natural dietary fibre), ILH technology serves as a dry powder drug formulation with wide-ranging applications for improving drug performance. ILH technology can be dosed orally to improve drug bioavailability or systemically to stimulate pH-triggered drug release and improve cellular uptake.



Technology

ILH microparticles have been harnessed to encapsulate a range of poorly water soluble drugs that are designed for oral administration, including simvastatin, fenofibrate, lurasidone and rifampicin. ILH particles provide a solubilising micro-environment, where poorly soluble drugs are hosted within the lipid nanoparticles, removing the rate-limiting dissolution step upon re-dispersion in aqueous gastrointestinal media. Furthermore, the inulin scaffold has shown to serve as a precipitation inhibitor for poorly soluble drugs, where the polymeric chain forms secondary interactions with the solubilised drug, and thus preventing crystal growth.

ILH particles have been shown to enhance the oral bioavailability of the poorly water soluble anti-psychotic drug, lurasidone, when dosed in the fasted state to Sprague Dawley rats.

Pharmacokinetic data revealed 9-fold enhancement in area-under the-curve when lurasidone was micro encapsulated within ILH particles, compared to the pure drug The additional benefits of solidifying lipid nanoparticles with inulin was revealed through a 3-fold improvement in AU compared to the liquid-state lipid nanoparticles, validiting the presence of a precipitation inhibition effect in vivo.

IP Status

Provisional patent filed.

Potential Markets

- Drug Formulation
- Pharmaceutical Companies

Partnering Opportunities

UniSA Ventures are seeking co-development partners, out-licencing, and investors.

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