



Novel Solid Emulsion based Curcumin Formulation with very high Bioavailability

TECHNOLOGY AVAILABLE FOR TRANSFER

UNMET NEED AND OPPORTUNITY

- Curcumin (CUR) is the prime curcuminoid in the Indian dietary spice turmeric, *Curcuma longa*, a plant of the Zingiberaceae family.
- Has diverse therapeutic benefits, such as antioxidant, anti-inflammatory, antitumor, anti-hyperglycemic, antimalarial, antibacterial, and antiviral activity, including anti-Alzheimer's disease.
- CUR is yet to reach the status of a therapeutic drug candidate mainly because a standard solid dosage of curcumin suffers from poor oral bioavailability ($0.05 \mu\text{g mL}^{-1}$, less than 1%)
- The reasons behind its low bioavailability include poor solubility ($<8 \mu\text{g mL}^{-1}$ in water), low permeability and absorption, and rapid metabolism (short elimination half-life of $<2 \text{ h}$)
- Technologies are therefore desirable for overcoming poor aqueous solubility and oral bioavailability of drugs.

TECHNOLOGY

The solid emulsion of present invention is prepared using novel composition. The said dried emulsion formulation is a free-flowing powder which can also be converted in to spheroids. The dried emulsion is easily reconstituted after diluting with water. Since liquid self- nanoemulsifying drugs (L-SNEDDS) suffer from challenges such as handling and transportation issues, this synbiotic formulation acts as a bio sorbent for conversion of L-SNEDDS to S-SNEDDS with enhanced bioavailability and synergistic effects.

The emulsion is easy to prepare at lab and industrial scale without the need of any time-consuming expensive procedures. This combination has proven to be cost-effective, non-toxic, easily available and additionally helps in enhancing the bioavailability of poorly soluble drugs such as lipophilic and gastrointestinal.

UNIQUE SELLING PREPOSITION

- Enhancement of bioavailability of curcumin by 50 folds as compared to naïve curcumin
- Solid emulsion as free flowing powder
- Significantly reduced dosage and ease of administration
- Incremental benefit of symbiotic in treatment of diabetes, inflammatory bowel syndrome, rheumatoid arthritis, cardiovascular and neurodegenerative diseases

STAGE OF DEVELOPMENT

- Proof of Concept data available
- Pharmacokinetics study completed evidencing high bioavailability

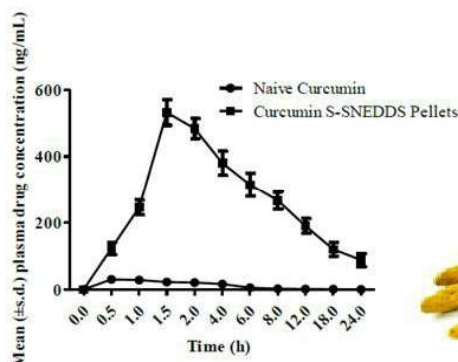


Fig.9. Mean (\pm s.d.) plasma vs time profile of curcumin in its naïve form and SNEDDS



INTELLECTUAL PROPERTY

Indian and PCT applications filed in 2019 & 2020.

LICENSING OPPORTUNITY

BCIL is looking for a suitable industrial partner for commercialization of nutraceutical formulation with enhanced bioavailability

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