



# 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 µg mL<sup>-1</sup>, less than 1%)
- The reasons behind its low bioavailability include poor solubility (<8 µg mL<sup>-1</sup> in water), low permeability and absorption, and rapid metabolism (short elimination half-life of <2 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

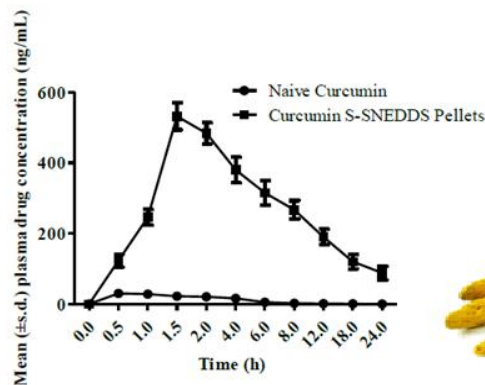


Fig.9. Mean (± s.d.) plasma vs time profile of curcumin in its naïve form and SNEDDS



## 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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