

Novel Drug Delivery Technology

NDDS for Herbal Formulations:

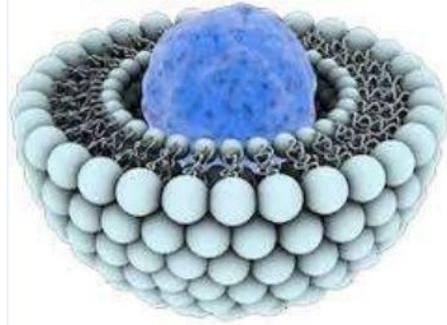
We at Medzus offers novel drug delivery technology services for Phyto-formulations, as it has advantage over the conventional formulations which include enhancement of bioavailability, solubility, stability and protection from physical and chemical degradation of the plant actives and extracts. Thus, we think nano sized novel drug delivery systems of herbal drugs have a potential future for enhancing the activity and overcoming problems associated with plant medicines.

In phyto-formulation we do research & develop the nano dosage forms (polymeric nanoparticles and nanocapsules, liposomes, solid lipid nanoparticles, phytosomes and nanoemulsion etc.).

Medzus are exploring therapeutic potentials of the herbal drugs through the value added drug delivery system. Medzus world-class expertise and state-of-the-art facilities in drug delivery technology ensures quality service for your phyto-formulation.

Our Practice on Novel Herbal Formulations includes:

- Liposomes/Phytosomes
- Polymeric Nanoparticles
- Nano emulsions
- Microsphere
- Transferosomes
- Ethosomes
- Polymeric Micelle Formulation



Material Characterization for Process Selection:

We assist in physico-chemical and biopharmaceutical profiling of new herbal ingredients; which aim to highlight potential physical / chemical stability and processing issues to choose the correct path for formulation development activities.

- Solid-state profiling and determination of critical material attributes (crystallinity, polymorphic form, melting-point / recrystallisation temperature, residual solvent / moisture)
- Hygroscopicity determination and hydrate formation / conversion / stability
- Particle characterisation (size, shape, morphology, surface area, porosity, surface tomography)
- pKa and dissociation equilibrium (experimental and in silico prediction from structure)
- Partition and distribution coefficient as a function of pH (LogP/D)
- pH-solubility profiling
- Solubility determination in biorelevant media (FaSSGF/FeSSGF, FaSSIF/FeSSIF, FaSSCoF, SLF, blood plasma)
- Polymorphic screening and salt selection
- Crystal structure elucidation

Effective Technology Selection for Improving Bioavailability:

Our enabling technologies include:

- Spray-dried dispersions (SDDs)
- Hot-melt extrusion (HME)
- Matrix microspheres (controlled and sustained release)
- Aqueous and organic nano-suspensions by wet-bead milling
- Solid nano-crystalline dispersions (SNCDs)
- API micronisation (wet and dry)
- Multi-particulates (immediate and controlled release)
- Solubilised liquids (including emulsions/ micro-emulsions, complexation (e.g. cyclodextrins), lipids and oily dispersions, liposomes, co-solvents)
- Freeze-drying
- Gastro-intestinal targeting through enteric coating (capsules (size 0 to 9), mini-tablets, tablets, pellets / granules).

Novel Technology Based Formulations Offers the Following Potential Benefits:

- Improved oral bioavailability
- Reduced pharmacokinetic variability
- Formulations with lower toxicity and improved tolerability
- Rapid onset of action
- Suitability for delivery of high drug payloads
- Gastro-intestinal targeting across a variety of preclinical models (inc. rodents, dogs and non-human primates)
- Suitability across various dosage forms and routes of administration, including oral, parenteral and pulmonary.

Therapeutic Formulations;

Oral; Tablet/Capsule/SGC/Syrup

Topical; Cream/Gel/Lotions/Liniment

Rectal/Vaginal; Suppository/pessaries

To date, we have successfully developed more than 10 drug product concept for our clients across the world. For more information on this service, please contact us.

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