

Title: Pharmaceutical Drug Formulation Method

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KEYWORDS: Extracellular Vesicle, pharmaceutical drug, Ultracentrifugation,

DOMAIN: Chemical

SUMMARY:

The present invention method involves formulating a pharmaceutical substance consisting of small drug molecules loaded onto extracellular vesicles, thus improving the solubility of the small molecules. The extracellular vesicle is extracted from conditioned cell media through ultracentrifugation. Subsequently, the loading of small drugs onto the extracellular vesicle is performed via probe sonication. The extracellular vesicle and the drug molecule are mixed in a defined ratio to get the desired pharmacological effect.

ADVANTAGES:

1. Loading the drug onto the extracellular vesicle improves the solubility of small drug molecules, thus reducing multiple dosage administration.
2. Enables modulation of oxidative microenvironment, increased glucose uptake, and GLUT4 receptor expression.

APPLICATION: Delivery vehicle of small molecule drugs, peptides, and siRNA or miRNA.

SCALE OF DEVELOPMENT: Drug formulation and the method have been validated at a lab scale. An in-vitro experiment of TEL drug-loaded nanovesicles was done on the cell.

TECHNOLOGY READINESS LEVEL: TRL 3

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