



# Prodrug with Enzyme Increases Absorption of Hydrophobic Drugs (20130297, Dr. Ronald Siegel)

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## Administration of Hydrophobic Drugs

Drugs that are repelled by water (hydrophobic) are difficult to absorb in the body due to poor water solubility and complexity of administration. For these types of pharmaceuticals to be administered, a prodrug is often utilized for proper body absorption through aided drug solubility. Currently, the procedure for administering hydrophobic drugs requires prodrugs to be delivered to the body systematically and then activated by endogenous enzymes present in the body. If this method is insufficient, the other option is to supersaturate prepared solutions by adding co-solvents. These administration techniques cannot adequately penetrate tissues or deliver consistent drug levels to the body. There is a need for a drug delivery system to be used in conjunction with hydrophobic drugs that can allow for proper absorption rates.

## Prodrug Absorption Technique

An absorption technique for hydrophobic drugs that uses a prodrug and enzyme administered together has been developed. The prodrug-enzyme solution has permeation rates greater than the drug administered alone. For situations where rapid action is required, such as neurological emergencies, seizures, brain tumors and strokes, this formulation is superior to current methods by allowing for quick absorption. Co-administration of a water-soluble prodrug and enzyme is superior to current techniques by delivering adequate drug levels to desired sites at proper ratios.

## BENEFITS AND FEATURES OF ADMINISTERING HYDROPHOBIC DRUG WITH ENZYME:

- Prodrug/Enzyme mixture is fast acting and developed for neurological emergencies
- Does not require endogenous enzymes
- Reliable drug administration through improved permeation allowing for absorption

**Phase of Development** In vitro data available

## Researchers

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