

Method of Transdermal Drug Delivery System

Researchers at the University of South Florida have developed a novel, non-invasive radio-frequency (RF) drug delivery system. Through the use of RF signals, drugs can easily cross the outermost layer of the skin providing enhanced drug delivery, uptake of a wider range of drugs, and greater consistency in the rate of drug delivery.

Current technology is limited to delivering relatively small drug molecules transdermally. The outermost layer of the skin made up of dead skin cells (stratum corneum) is the main obstacle to transdermal drug delivery. To address the skin barrier our new technology uses radio frequency (RF) signals to disrupt the stratum corneum in effect creating temporary micro-channels in the skin, up to 100 micron in size, through which the drug molecules can more freely pass. The skin returns to normal within a few minutes.

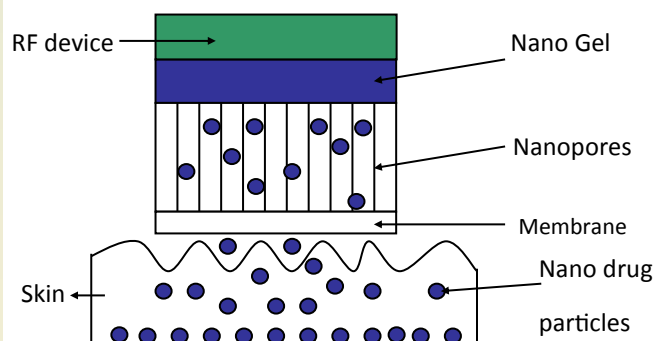
Our RF device also improves dosing of transdermal drugs. Current transdermal drug delivery technologies release the drug over a timeframe of hours to days at a nearly steady rate. But effective dosages vary among patients because stratum corneum thickness vastly varies from person to person.

This varying thickness causes absorption rates to also vary from person to person. Our RF delivery system avoids this absorption problem because the stratum corneum is bypassed completely. The drug is applied directly to the normal living cells which more readily absorb the drug, concurrently allowing absorption of a much wider range of drug molecule variants (size, pH, and solubility) at a consistent rate. Modulating the RF signal, and thus modulating the rate of drug application, allows for much more flexibility in dosage scheduling.

ADVANTAGES:

- **Wide range of drugs can be delivered**
- **Improved drug uptake**
- **Minimal complications and side effects**
- **Low cost and Easy to use**
- **Flexibility and consistency in dosing**

Use of Radio Frequencies Improves Transdermal Drug Delivery



Schematic of transdermal RF delivery system

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