

Increasing the Oral Bioavailability of Opioids and Phenolic Bioactives

Uses of Combinations of GRAS and Dietary Substances

The technology

Dr. Gerk has developed methods of enhancing the bioavailability of phenylephrine, buprenorphine, and similar compounds by using a combination of GRAS and dietary substances to inhibit their presystemic metabolism. The approach was developed with FDA qualifications in mind from the beginning, and it is appropriate for FDA applications and regulations. *In vitro* and *in vivo* studies indicate the efficacy of the approach.

- Results from *in vivo* studies indicate an enhancement in oral bioavailability of buprenorphine by 2-3 fold.
- Identified agents include a proprietary and unique combination of several GRAS and dietary compounds.
- Regulatory hurdles will be minimized by the choice of compounds. These compounds are considered GRAS by the FDA, since their safety has been previously demonstrated.
- *In vitro* results using single agents and combinations of agents have established potency for defined pathways of metabolism.
- *In vitro-in vivo* extrapolation supports the feasibility of the approach for increasing oral buprenorphine bioavailability comparable to the sublingual route.
- Further mechanistic characterization is desirable to help with development of the technology.
- Protocols for *in vivo* testing in small groups of normal healthy subjects are being developed.
- The selected compounds in appropriate ratios will be identified and validated. The development of marketable dosage forms will require a formulation partner.

Benefits

- » Enhanced absorption and solubility
- » Increased bioavailability
- » Compounds lack adverse effects

Applications

- » Enhancing bioavailability and pharmacokinetics of phenylephrine, buprenorphine, resveratrol, natural compounds, and other compounds with phenolic groups
- » Novel approach for oral drug delivery

Patent status:

Patent issued: U.S. rights are available.
14/781,683

License status:

This technology is available for licensing to industry for further development and commercialization.

Category:

Biomedical

VCU Tech #:

10-092F, 12-105

Investigators:

[Philip Gerk, Ph.D.](#)

External Resources:

[Verenich and Gerk \(2010\)](#)

[Joshi et. al. \(2016\)](#)

[Joshi et. al. \(2017\)](#)

Contact us about this technology

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