Pharmacokinetics of HMPs

The industrial R&D perspective

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The HMPs scientific area map

therapeutical efficacy
pharmacology
pharmacokinetics
pharmaceutical quality
safety
Sit back and relax
Sit back and relax

- No specific guidelines for pharmacokinetics of HMPs
- Registration of WEU or THMPs may be obtained without pharmacokinetical data
- No dissolution tests for immediate release products and well soluble plant extracts
- Biopharmaceutical investigations only for modified release products
Keep an eye on
Keep an eye on

- Standardised or quantified extracts (Pharm. Eur.)
- Low soluble extracts
- Potential risk
Plasmas levels of silibinin after application of 3 pharmaceutical formulations A, B, C

acc. Schulz et al.
Bioavailability of hypericin

- Phototoxicity caused by Hypericin:

- Solubility and bioavailability of hypericin depends on content of tannins,
  - Bioavailability study necessary in case of >1800 mg extract per day and > 1 mg total hypericin per day (BfArM)
High state of alert
High state of alert

Development and registration of new plant extracts and HMPs

TOXICOLOGY

- GLP toxicokinetic studies demonstrating uptake and absorption in different animal species
- Quantification of exposure
- Similarity and differences across species
- Intended dose in humans
- Metabolism
High state of alert

Development and registration of new plant extracts and HMPs

**CLINICAL RESEARCH**

- Ethics committee, study directors and authorities insist on pharmacokinetics
- Pharmacokinetical questions have to be addressed within the European IMPD formate
- Clinical phase-I studies include pharmacokinetical investigations
Summary (I)

WEU and THMP

Modified release HMPs

Standardised, quantified, low soluble extracts

NO pharmacokinetics

SELECTED biopharmaceutical / pharmacokinetical investigations

SELECTED biopharmaceutical / pharmacokinetical investigations
Summary (II)

New plant extracts / HMPs

GLP toxicokinetics demonstrating absorption

Clinical pharmacokinetics demonstrating absorption / compliance

Toxicological interpretation, metabolites, dose

Clinical interpretation, metabolites, dose