

Drug metabolite synthesis using electrochemistry

Technologie : CatalyseurApplication : Santé / Cosmétologie

L'innovation

Launching any new drug onto the market requires regulatory pre-clinical studies, with a focus on identifying metabolites of the active ingredients.

When a drug is administered, active ingredient undergoes an oxidation reaction step through liver's cells, catalized by cytochrome P450 enzyme.

Current pre-clinical studies use hepatocytes, microsomes, and natural or synthetic catalysts to identify oxidized metabolites from active ingredients. These biological methods are unable to provide metabolites on large scales (some µg only), and require some heavy extra synthesis steps to get greater quantities needed for toxicity evaluation. In addition, current methods can't stabilize metabolites with a short half-life.

We have developed an electrochemical device that can carry out oxidation reactions, stabilization, and is able to synthesize sufficient metabolites quantities from an active ingredient in solution.

Our aim is to mimic biological reactions (as oxidation) that mainly take place in liver (hepatocytes) after drug ingestion, by using electrochemistry. Thanks to a stabilization compartment, the device can continuously produce the metabolites that are naturally unstable.

This electrochemical device uses single use screen-printed electrodes (PVC or cellulose) which ensure optimal performances at a low cost.

Our method also enables continuous and fast synthesis (around 100 mg/h), providing quicker results to clinicians.

In addition, the stabilization system makes it easier to analyze drugs with highly unstable metabolites.

Ses bénéfices

- Less costly compared to existing methods.
- Faster to produce metabolites.
- Enables to stabilize short half-life metabolites.

Ses applications

- Pharmaceutical industry.
- Analytical laboratories.

Laboratoire de recherche

UMR 6230 - CEISAM

Équipe de recherche

Chimie et Interdisciplinarité : Synthèse,
Analyse Modelisation

Propriété intellectuelle associée

FR : FR1350154 - filed on the 01-08-2013
WO - CH,CN,DE,EP,FR,GB,NL,US

Stade de développement

- TRL4 - Validation de la preuve de concept

INTÉRESSÉ PAR CETTE OFFRE ?
Contactez Christophe AURIANT christophe.auriant@ouest-valorisation.fr 02 99 87 46 56