GALILEO RESEARCH

Driving Research Beyond

Speed Innovation
Drug Discovery
Toxicogenomics
Epigenetic Profiling
Proteomics
Lead Optimization
Toxicology
Pharmacokinetics
Bionalytical Services
Pharmacodynamics
Food Industry
Chemical Industry
Cosmetic Industry

Drug Discovery

We can help you to select the suitable test to screen your library of new molecules and select the hits and lead.

Our battery of tests includes:

- Acqueous solubility: an important determinant of the usefulness of a drug candidate that may have a marked impact on the whole process of drug discovery and development.
- Partition coefficient: a measurement of differential solubility of a compound in a hydrophobic solvent (octanol) and a hydrophilic solvent (water). The logarithm of these two values enables compounds to be ranked in terms of hydrophilicity (or hydrophobicity).
- Solubility and stability in Simulated Gastric Fluid and Simulated Intestinal Fluid (both fed and fasted): a key to understanding how a drug will dissolve in vivo after oral administration, and to determine its solubility in the different environments of the stomach, small intestine, and colon.
- Plasma protein binding (human and rodent): The binding of drug to plasma (and tissue) proteins is a major determinant of drug disposition (distribution). Binding has a very important effect on pharmacodynamics since only the unbound drug usually interacts with its molecular target. Protein binding assay can be done on plasma originating from any animal species. Usually human and rat plasma are tested in order to facilitate comparison between non-clinical and clinical data.
- Intestinal permeability in Caco-2 monolayer (bidirectional): to predict the oral absorption of drugs. The assay measures drug transport across a Caco-2 cell monolayer bidirectionally, thus predicting whether the molecule undergoes active efflux.
- Skin permeability: in case of transdermal administration, a test to predict the skin absorption of your drug is fundamental to understand its availability and design a suitable vehicle.
- P-gp inhibition: to determine the role of P-glycoprotein in the active transport of the compound across Caco-2 cell monolayers.
- Metabolic stability in human and rodent microsomes, S9, fresh hepatocytes: very important parameters in defining the pharmacological and toxicological profile of drugs. Since rat is one of the animal species recommended for toxicological studies, it is important to have metabolic stability data from rat microsomes, to be compared with the human data.
- Plasma stability: useful to understand degradation to predict efficacy, right timing for PK analysis. Can be done in plasma from different species, to allow comparison between non-clinical and clinical data.
- Brain/plasma ratio: fundamental to understand bioavailability of CNS drugs. The test is done in vivo, on a small number of mice.
- CYP450 identification, induction and inhibition: provides information on potential drug-drug interactions. CYP1A, CYP2B6, CYP2C8, CYP2C9, CYP2C19, CYP2D6 and CYP3A4 are the most important proteins; other isoforms are available. Test systems from rats can also be used.
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- Genotoxicity (Ames' test, MLA, chromosomal aberration, in vivo/in vitro micronucleous test)
- In vitro cytotoxicity: the evaluation of the drug effect on several cell lines and the mechanisms potentially implicated in cell death, as well as, the clarification of mechanisms of cell death (necrosis, apoptosis). NRU (Neutral Red Uptake) assay in 3T3 cells is the test of choice, as recommended by the OECD (Series on Testing and Assessment No. 129 - Guidance document on using cytotoxicity tests to estimate starting doses for acute oral systemic toxicity tests); other cell lines are available, as well as other assay methods.
- In vivo acute toxicity: provides a preliminary understanding of the Maximum Tolerated Dose and the Efficacy/Safety ratio.

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