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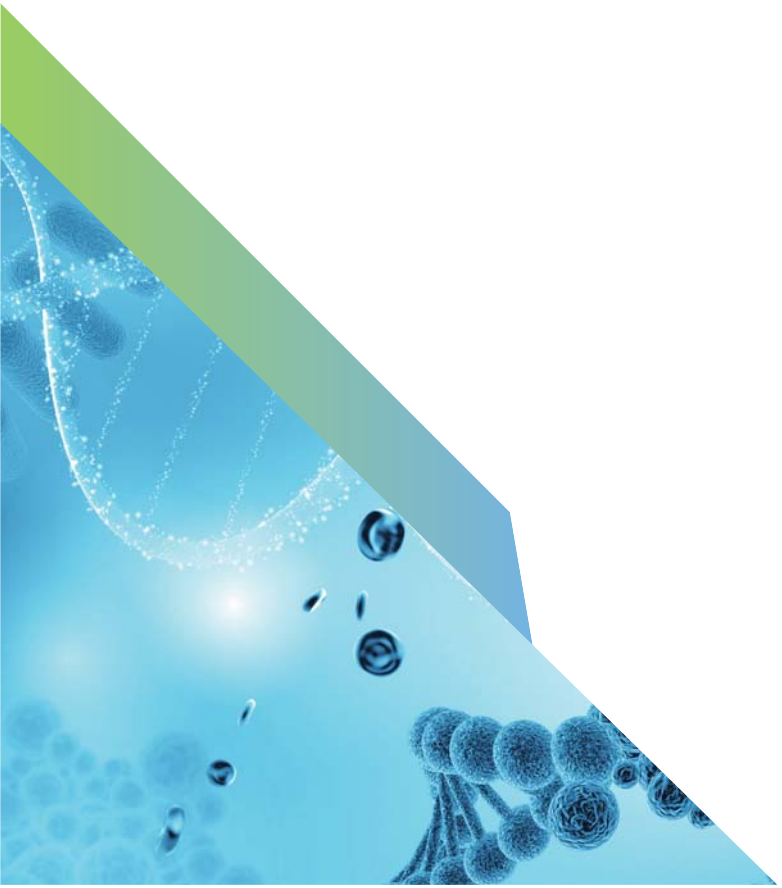
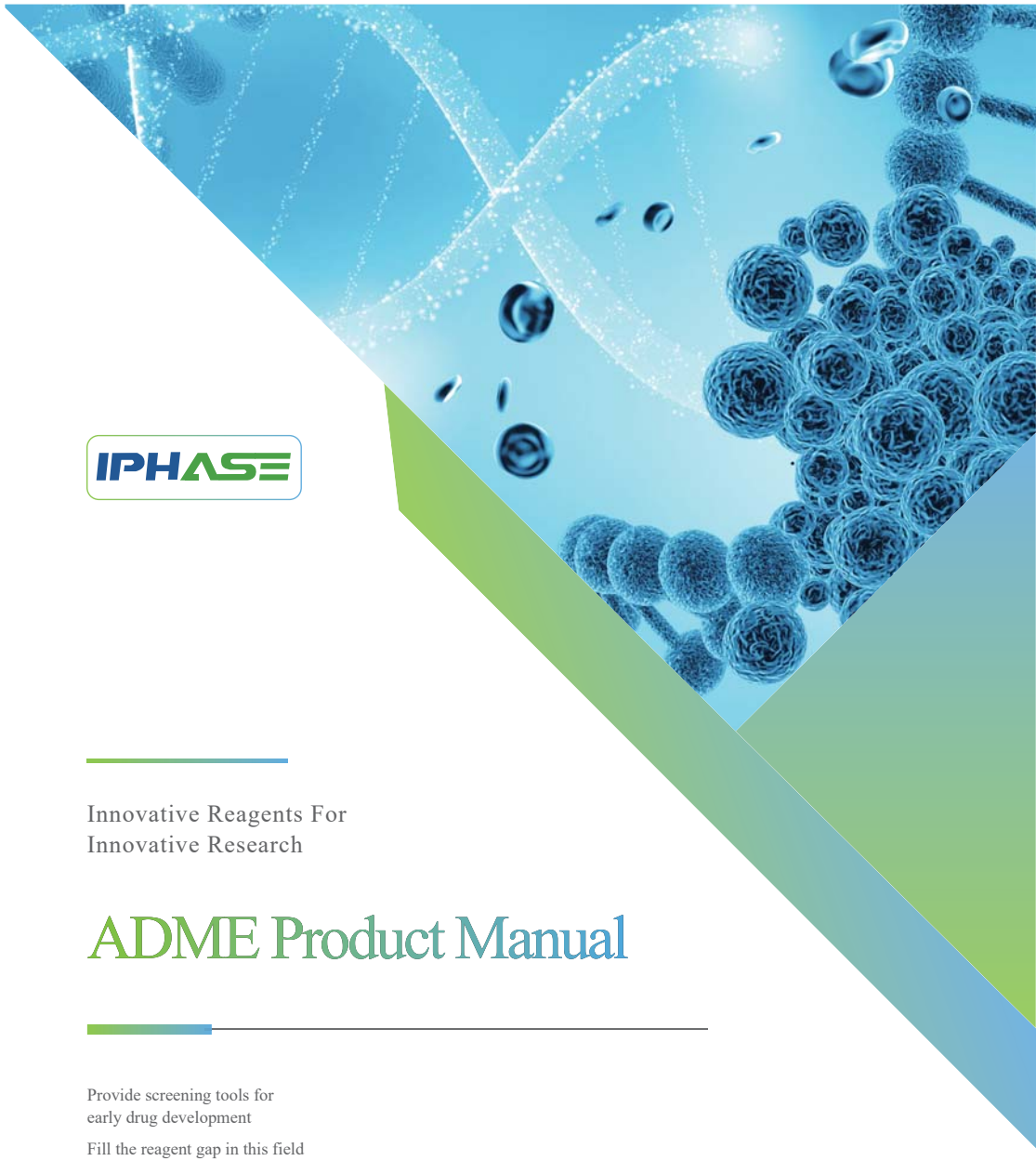




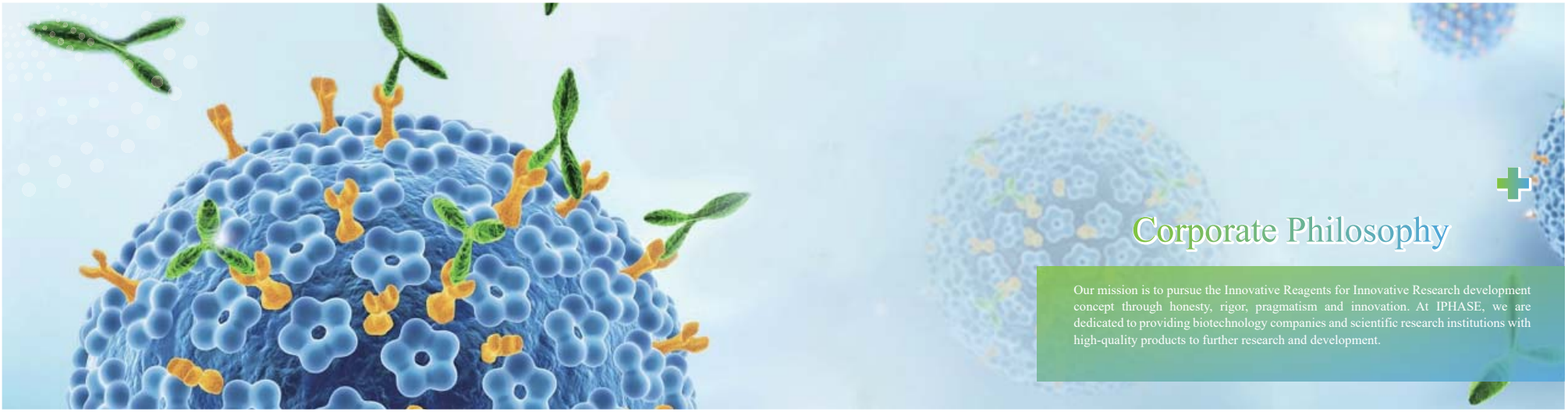
Innovative Reagents For
Innovative Research

ADME Product Manual

Provide screening tools for
early drug development

Fill the reagent gap in this field

IPHASE Biosciences



Corporate Philosophy

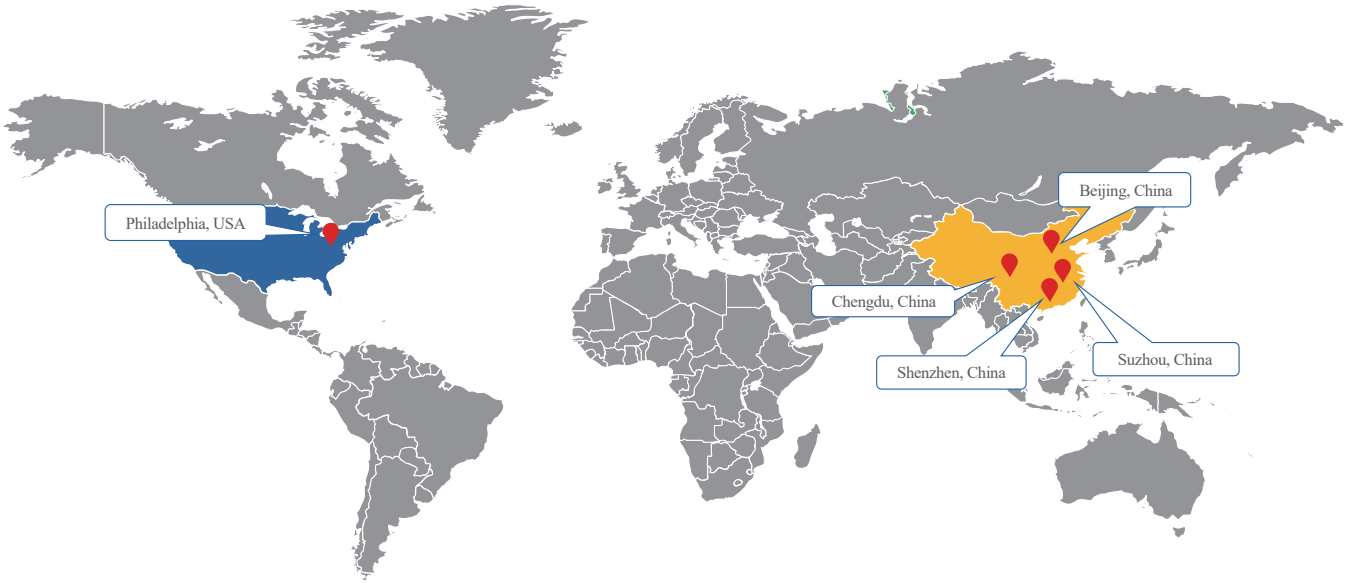
Our mission is to pursue the Innovative Reagents for Innovative Research development concept through honesty, rigor, pragmatism and innovation. At IPHASE, we are dedicated to providing biotechnology companies and scientific research institutions with high-quality products to further research and development.

About

IPHASE (founded in 2018) is a high-tech enterprise focusing on bio-medicinal and life science research. Our scientific team is dedicated to providing high-quality innovative biological reagent products and related technical services for scientists through rich knowledge reserve and unremitting scientific exploration.

IPHASE commenced operations in 2010 and launched its first ADMEs products for drug early screening. IPHASE has further expanded its product portfolios through robust investment and efforts in research and development of products used in pharmacokinetics, pharmacology, microbiology, genotoxicity, immunology, and caner. Our products are validated by either peer-recognized in-house standards or international harmonized standards (e.g. OECD and ICH).

The core competencies and capabilities of IPHASE are chemical and biological analysis, cytogenetics, DNA engineering, protein and antibody development, and immunoassay.



Catalogue

Introduction

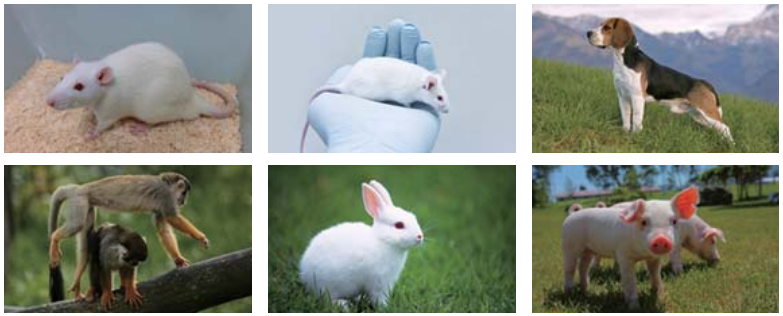
Preclinical research is an essential step in drug research and development, and pharmacokinetics is an important component of preclinical pharmacological evaluation, which not only determines the success of the R&D of innovative drug products, but also relates closely to R&D efficiency and quality. Generally, drug metabolic reaction is drug biotransformation. Drug biotransformation is an important process through which drugs are eliminated from the body. Drug biotransformation is mainly divided into phase I and phase II metabolism. Phase I reactions mainly include hydrolysis, oxidation, and reduction reactions, primarily mediated by cytochrome P450 enzymes; phase II reactions are mainly conjugation reactions that involve uridine diphosphate-glucuronosyltransferase (UGT), N-acetyltransferase (NAT), glutathione S-transferase (GST), sulfotransferase (ST), and methyltransferase (MT). Drug biotransformation mainly takes place in the liver, and also occurs in other organs such as the intestines, kidney, lung, blood, and skin.

A key and complex issue in drug biotransformation is how to extrapolate findings to establish correlations in order to predict the metabolic behavior of drugs in humans and hence predict drug efficacy a nd safety. In order to perform such prediction work accurately, it is critical to select an appropriate *in vitro* model.

IPHASE has developed a series of *in vitro* metabolic models and related products such as microsomes, S9, cytosol, recombinant enzymes, and primary hepatocytes, in response to the needs of drug metabolism research. In addition, the company can also provide customized services including unconventional samples of microsomes, S9, and cytosol from specific species, specific models and specific ages.

Application

- Metabolic stability studies
- Metabolic phenotype studies
- Drug-drug interaction studies
- CYP enzyme inhibition and induction studies
- Drug metabolic profiling studies



Metabolism Research Kits

In response to the needs of drug metabolism research, IPHASE has developed a series of kits specifically for *in vitro* metabolism research under the guidance of *in vitro* recombinant enzyme incubation methods for liver microsomes. These products eliminate the tedious process of liver microsome/recombinant enzyme preparation and reagent formulation, thereby greatly shortening the experimental period.

Advantages

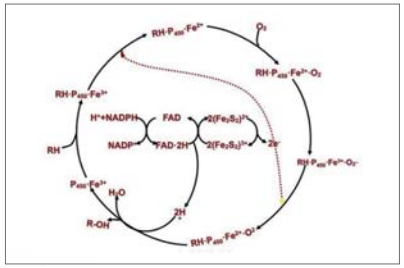
- A complete range of products: There are various kits for phase I and phase II metabolic stability studies of microsomes from different species to meet the needs of metabolic stability studies.
- Convenience: All reagents required for the study are integrated to save the reagent preparation and formulation time and shorten the experimental period.
- Accuracy: Since each component of the kit has undergone strict quality testing, the study results will be accurate, reliable and highly reproducible .
- Stability: High stability makes the kit easy to transport and store.
- Simplification: Streamlined test process for easy use.

Metabolic Stability Research Kit

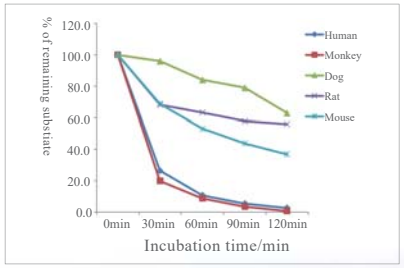
Metabolic stability reflects the sensitivity of a compound to biotransformation and is one of the main factors that affect pharmacokinetic properties. Low metabolic stability means that a compound is easily metabolized in the body, which often indicates poor pharmacokinetic properties, such as low oral bioavailability and short duration of action. Metabolic stability studies not only predict the human clearance rate through *in vitro* intrinsic clearance rate (Clint), but they also provide support for the selection of animal species for safety evaluation based on the consistency in metabolic rate among various species.

IPHASE provides a series of kits for assessing phase I metabolic stability and phase II metabolic stability. The kits contain all components for metabolic stability research, such as NADPH regeneration system and/or UGT incubation system, liver microsomes, buffer, positive substrate, etc., and can be directly used for metabolic stability research.

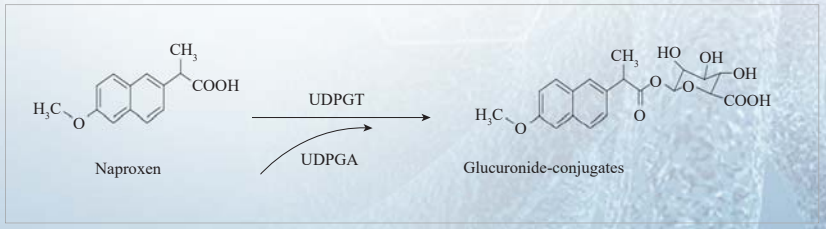
Description	Species	Unit Size
IPHASE I Metabolic Stability Research Kit	Human、Monkey、Dog、Rat、Mouse	0.2mL*100 test
IPHASE II Metabolic Stability Research Kit	Human、Monkey、Dog、Rat、Mouse	0.2mL*50 test



Reaction of adding monooxygenase



Phase I metabolic stability of a drug in liver microsomes of different species



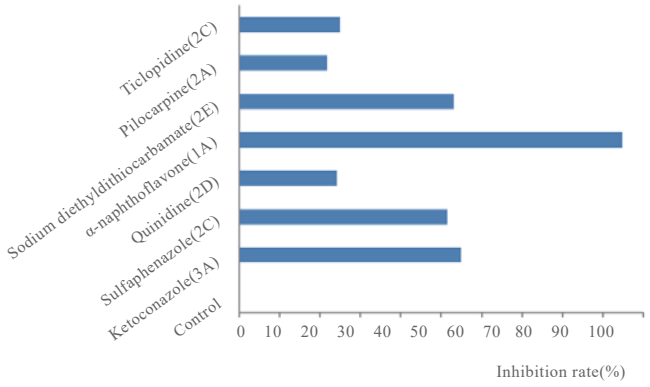
Glucuronic acid binding reaction

Metabolic Phenotype Research Kit

Phenotype characterization of drug metabolizing enzymes is one of the important steps in preclinical drug metabolism research. In order to obtain better treatment efficacy, combination therapy is a commonly used scheme during clinical treatment. However, better efficacy is often accompanied by adverse events caused by drug-drug interaction (DDI). For a drug that is mainly eliminated by metabolism, if a single metabolic enzyme is largely responsible for elimination, the possibility of metabolic DDI is high when it is used in combination with its inhibitor and/or inducer. Metabolic profiling of a compound can identify the metabolic enzymes/reactions involved in the biotransformation of the drug, estimate the contribution of each metabolic enzyme/reaction, evaluate the possibility and degree of DDI, and assess the degree of variation in drug exposure among different individuals (involvement of metabolic enzymes with genetic polymorphism).

IPHASE provides a series of kits for assessing the metabolic phenotype of drugs. The kits contain all the reagents required for the identification of metabolic phenotype, such as NADPH regeneration system, liver microsome/recombinase, buffer, positive substrate, inhibitor, etc., which can be directly used for the metabolic phenotype study of drugs.

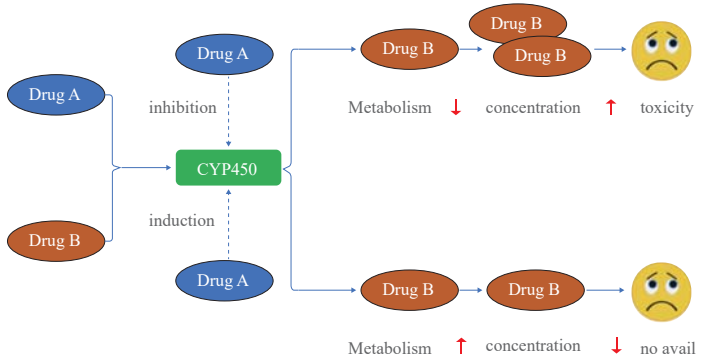
Description	Method	Unit Size
IPHASE CYP450 Metabolic Phenotype Research Kit	Chemical inhibition method （Liver Microsome）	0.2mL*50 test
	Recombinant enzyme method （Recombinant CYP450 enzyme）	0.2mL*105 test



Metabolic inhibition rate of a drug in human liver microsome

Enzyme Inhibition Research Kit

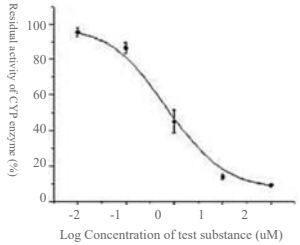
Drug- Drug Interation is a major cause of serious adverse reactions and even death in clinical practice. DDIs involving CYP mainly include two types, namely enzyme inhibition and enzyme induction. Enzyme inhibition occurs when a certain compound inhibits the activity of drug metabolizing enzymes in the liver, which slows down the metabolism of another drug when used in combination with the compound, resulting in increased blood concentration of the drug and toxicity. Enzyme induction occurs when a certain compound increases the activity of drug metabolizing enzymes in the liver, which accelerates the metabolism of another drug when used in combination with the compound, resulting in decreased blood concentration of that drug and reduced or loss of efficacy.



Diagrammatic sketch of drug-drug interaction

IPHASE provides a series of kits for evaluating enzyme inhibition (IC50) studies. The kits integrate all reagents required for enzyme inhibition (IC50) studies, such as NADPH regeneration system, liver microsome, buffer, positive substrate, etc., and can be directly used for enzyme inhibition studies of drugs.

Description	Species	Unit Size
IPHASE Enzyme Inhibition Research Kit	Human、Monkey、Dog、Rat、Mouse	0.2mL*50 test



Subcellular Fractions

Compared with the *in vivo* metabolism study, the *in vitro* metabolism study of drugs can eliminate the influence of many interfering factors *in vivo* and directly observe the selective metabolism of drug metabolizing enzymes to substrates. It is an important content in the early screening of drugs. At present, subcellular model has been widely used in the study of drug metabolism because of its relatively simple preparation and good stability. Common subcellular models include microsome, S9, cytosolic fluid, lysosome, mitochondria, etc.

Through its advanced equipment, professional technicians and years of R&D experience, IPHASE provides subcellular models of different organs, such as microsome, S9, Cytosol, etc.

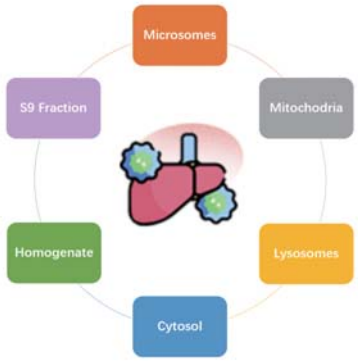
Advantages

- High enzymatic activity: Enzymatic activity is equal to or higher than that of similar imported products.
- Batch production: Batch production provides adequate stock of products and ensures supply of products from the same batch.
- Short delivery period: Domestic spot goods inhouse production ensure enough products to meet the customers' needs.
- Perfect after-sales service system: A full range of services provided by professional technicians .
- Customization: Customization of unconventional samples from specific species, specific models and specific ages.

Products of Liver Metabolism

The liver is an important organ for drug metabolism and biotransformation and contains various enzymes involved in the phase I and phase II metabolism of drugs.
Many of the in vitro metabolic models are based on the liver.

Through its advanced equipment, professional technicians and years of R&D experience, IPHASE possesses liver microsomes, liver S9 and liver Cytosol products from different animal species, which have attained great support and trust from customers.



Liver Microsomes

Description	Strain	Protein Concentration	Unit Size
IPHASE Human Liver Microsomes	Homo Sapiens	20mg/mL	0.5mL
IPHASE Monkey Liver Microsomes	Cynomolgus, Rhesus	20mg/mL	0.5mL
IPHASE Dog Liver Microsomes	Beagle	20mg/mL	0.5mL
IPHASE Rat Liver Microsomes	Sprague-Dawley、Wistar、Wistar Han	20mg/mL	0.5mL
IPHASE Mouse Liver Microsomes	ICR/CD-1、C57BL/6、KM、BALB/c	20mg/mL	0.5mL
IPHASE Hamster Liver Microsomes	/	20mg/mL	0.5mL
IPHASE Feline Liver Microsomes	/	20mg/mL	0.5mL
IPHASE Minipig Liver Microsomes	Miniature Pig	20mg/mL	0.5mL
IPHASE Rabbit Liver Microsomes	New Zealand White，Japanese White	20mg/mL	0.5mL

Liver S9 Fraction

Description	Strain	Protein Concentration	Unit Size
IPHASE Human Liver S9 Fraction	Homo Sapiens	20mg/mL	0.5mL
IPHASE Monkey Liver S9 Fraction	Cynomolgus, Rhesus	20mg/mL	0.5mL
IPHASE Dog Liver S9 Fraction	Beagle	20mg/mL	0.5mL
IPHASE Rat Liver S9 Fraction	Sprague-Dawley、Wistar、Wistar Han	20mg/mL	0.5mL
IPHASE Mouse Liver S9 Fraction	ICR/CD-1、C57BL/6、KM、BALB/c	20mg/mL	0.5mL
IPHASE Minipig Liver S9 Fraction	Miniature Pig	20mg/mL	0.5mL

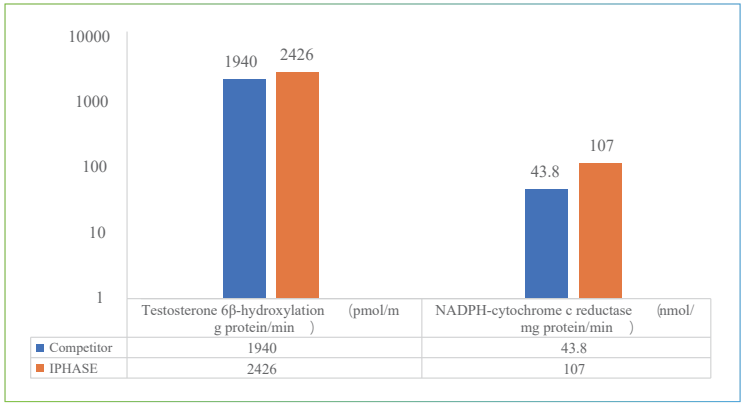
Liver Cytosol

Description	Strain	Protein Concentration	Unit Size
IPHASE Human Liver Cytosol	Homo Sapiens	10mg/mL	1mL
IPHASE Monkey Liver Cytosol	Cynomolgus, Rhesus	10mg/mL	1mL
IPHASE Dog Liver Cytosol	Beagle	10mg/mL	1mL
IPHASE Rat Liver Cytosol	Sprague-Dawley、Wistar、Wistar Han	10mg/mL	1mL
IPHASE Mouse Liver Cytosol	ICR/CD-1、C57BL/6、KM、BALB/c	10mg/mL	1mL
IPHASE Minipig Liver Cytosol	Miniature Pig	10mg/mL	1mL

Products of Intestinal Metabolism

The gastrointestinal wall is an important site for first-pass metabolism of oral drugs, which is usually associated with CYP450 and UGT. However, esterase activity in the gut can also contribute significantly to drug metabolism. Therefore, when studying metabolism through CYP450 and UGT, the effect of esterase-mediated metabolism on the study results needs to be excluded.

After continuous exploration and optimization, IPHASE is able to inhibit the activity of esterase as much as possible while protecting the activities of most CYP450 and UGT enzymes in the intestinal subcellular components using a method combining intestinal elution and protease inhibitors. The company has now established intestinal microsomes, intestinal S9 and intestinal Cytosol products from different animal species, which contributes to the study of intestinal drug metabolism.



	Testosterone 6β-hydroxylation (pmol/mg protein/min)	NADPH-cytochrome c reductase (nmol/mg protein/min)
Competitor	1940	43.8
IPHASE	2426	107

Comparison of key indexes of cynomolgus monkeys intestinal microsomes

Intestinal Microsomes

Description	Strain	Protein Concentration	Unit Size
IPHASE Human Intestinal Microsomes	Homo Sapiens	10mg/mL	0.15mL
IPHASE Monkey Intestinal Microsomes	Cynomolgus, Rhesus	10mg/mL	0.15mL
IPHASE Dog Intestinal Microsomes	Beagle	10mg/mL	0.15mL
IPHASE Rat Intestinal Microsomes	Sprague-Dawley、Wistar、Wistar Han	10mg/mL	0.15mL
IPHASE Mouse Intestinal Microsomes	ICR/CD-1、C57BL/6、KM、BALB/c	10mg/mL	0.15mL
IPHASE Minipig Intestinal Microsomes	Miniature Pig	10mg/mL	0.15mL

Intestinal S9 Fraction

Description	Strain	Protein Concentration	Unit Size
IPHASE Human Intestinal S9 Fraction	Homo Sapiens	4mg/mL	1.0mL
IPHASE Monkey Intestinal S9 Fraction	Cynomolgus, Rhesus	4mg/mL	1.0mL
IPHASE Dog Intestinal S9 Fraction	Beagle	4mg/mL	1.0mL
IPHASE Rat Intestinal S9 Fraction	Sprague-Dawley、Wistar、Wistar Han	4mg/mL	1.0mL
IPHASE Mouse Intestinal S9 Fraction	ICR/CD-1、C57BL/6、KM、BALB/c	4mg/mL	1.0mL
IPHASE Minipig Intestinal S9 Fraction	Miniature Pig	4mg/mL	1.0mL

Intestinal Cytosol

Description	Strain	Protein Concentration	Unit Size
IPHASE Human Intestinal Cytosol	Homo Sapiens	10mg/mL	0.15mL
IPHASE Monkey Intestinal Cytosol	Cynomolgus, Rhesus	10mg/mL	0.15mL
IPHASE Dog Intestinal Cytosol	Beagle	10mg/mL	0.15mL
IPHASE Rat Intestinal Cytosol	Sprague-Dawley、Wistar、Wistar Han	10mg/mL	0.15mL
IPHASE Mouse Intestinal Cytosol	ICR/CD-1、C57BL/6、KM、BALB/c	10mg/mL	0.15mL
IPHASE Minipig Intestinal Cytosol	Miniature Pig	10mg/mL	0.15mL

Products of Kidney Metabolism

The Kidneys not only play a role in maintaining water and electrolyte balance and excreting endogenous and exogenous substances, they are also important organs for phase I and phase II metabolic biotransformation.

Through its advanced equipment, professional technicians and years of R&D experience, IPHASE possesses Kidney microsomes, Kidney S9 and Kidney Cytosol products from different animal species, which are helpful for the study of Kidney metabolism of drugs.

Kidney Microsomes

Description	Strain	Protein Concentration	Unit Size
IPHASE Human Kidney Microsomes	Homo Sapiens	10mg/mL	0.5mL
IPHASE Monkey Kidney Microsomes	Cynomolgus, Rhesus	10mg/mL	0.5mL
IPHASE Dog Kidney Microsomes	Beagle	10mg/mL	0.5mL
IPHASE Rat Kidney Microsomes	Sprague-Dawley、Wistar、Wistar Han	10mg/mL	0.5mL
IPHASE Mouse Kidney Microsomes	ICR/CD-1、C57BL/6、KM、BALB/c	10mg/mL	0.5mL
IPHASE Minipig Kidney Microsomes	Miniature Pig	10mg/mL	0.5mL

Kidney S9 Fraction

Description	Strain	Protein Concentration	Unit Size
IPHASE Human Kidney S9 Fraction	Homo Sapiens	4mg/mL	1.0mL
IPHASE Monkey Kidney S9 Fraction	Cynomolgus, Rhesus	4mg/mL	1.0mL
IPHASE Dog Kidney S9 Fraction	Beagle	4mg/mL	1.0mL
IPHASE Rat Kidney S9 Fraction	Sprague-Dawley、Wistar、Wistar Han	4mg/mL	1.0mL
IPHASE Mouse Kidney S9 Fraction	ICR/CD-1、C57BL/6、KM、BALB/c	4mg/mL	1.0mL
IPHASE Minipig Kidney l S9 Fraction	Miniature Pig	4mg/mL	1.0mL

Kidney Cytosol

Description	Strain	Protein Concentration	Unit Size
IPHASE Human Kidney Cytosol	Homo Sapiens	10mg/mL	0.15mL
IPHASE Monkey Kidney Cytosol	Cynomolgus, Rhesus	10mg/mL	0.15mL
IPHASE Dog Kidney Cytosol	Beagle	10mg/mL	0.15mL
IPHASE Rat Kidney Cytosol	Sprague-Dawley、Wistar、Wistar Han	10mg/mL	0.15mL
IPHASE Mouse Kidney Cytosol	ICR/CD-1、C57BL/6、KM、BALB/c	10mg/mL	0.15mL
IPHASE Minipig Kidney Cytosol	Miniature Pig	10mg/mL	0.15mL

Accessory Products

Subcellular model is indispensable in the study of drug metabolism. However, due to the lack of complete cell structure, the occurrence of metabolic reaction requires additional cofactors and an appropriate physiological environment to ensure the normal progress of metabolic reaction.

With years of R&D experience and accumulation, IPHASE has optimized a series of supporting products for the smooth progress of drug R&D.

Description	Unit Size
IPHASE Probe Substrate Metabolite,7 Mixed	1μg/mL,1mL
IPHASE NADPH Regeneration System	Solution A 5mL，Solution B 1mL
IPHASE UGT Incubation System	3mL
IPHASE Phosphate Buffer,0.1M	100mL
IPHASE Tris-HCL Buffer	100mL

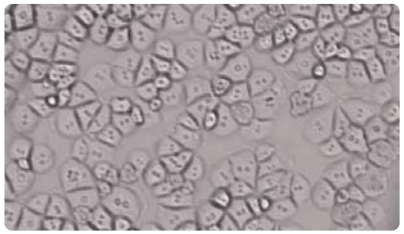
Primary hepatocytes

Primary hepatocytes are cultured immediately after being removed from animal livers. Primary hepatocytes show good reproducibility in *in vitro* studies because they maintain the metabolic functions of the liver and retain enzymes at levels consistent with those *in vivo*. As a result, primary hepatocytes have become the "gold standard" for *in vitro* drug studies and are widely used in drug metabolism and toxicology studies for the following purposes (1) to investigate the metabolic pathways and pharmacokinetics of drugs in the liver; (2) to evaluate the induction of cytochrome P450 enzymes in the liver by drugs and exogenous substances and to explore the mechanisms of induction; (3) to predict and elucidate DDI; and (4) to assess the cytotoxicity of drugs.

IPHASE provides suspension and adherent cell cultures of primary hepatocytes from different animal species such as humans, monkeys, dogs, rats, mice, and pigs to facilitate *in vitro* drug studies.

Advantages

- Compliance: The products are obtained from clear sources and are compliant with ethical and informed consent requirements, which eliminate future concerns
- Safety: The animals used for isolation of primary hepatocytes have been tested for infectious agents, which makes the hepatocytes safe to use
- High viability: Cell viability after resuscitation can reach over 85%, which meets the requirements of drug research
- High purity: Cells are isolated using special kits and have high purity

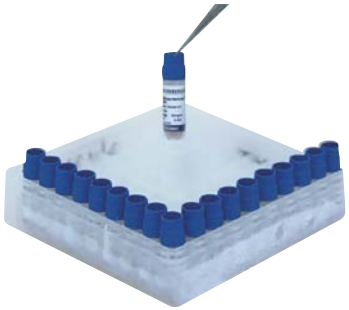


Description	Strain	Unit Size
IPHASE Human Hepatocytes	Suspension，Plateable	4~6million
IPHASE Monkey(Cynomolgus) Hepatocytes	Suspension，Plateable	4~6million
IPHASE Dog(Beagle) Hepatocytes	Suspension，Plateable	4~6million
IPHASE Rat(Sprague Dawley) Hepatocytes	Suspension，Plateable	4~6million
IPHASE Mouse(ICR/CD1) Hepatocytes	Suspension，Plateable	4~6million
IPHASE Mini-pig Hepatocytes	Suspension，Plateable	4~6million

Transporters

As an important functional membrane protein in the body, transporters take drugs or endogenous substances into or out of cells and play an important role in drug absorption, distribution, metabolism and excretion. There are many types of transporters involved in the transmembrane transport of drugs in the human body. These transporters can be divided into influx and efflux transporters based on the direction of transmembrane transport of substrates. Transporters that mediate the influx of drugs into cells and deliver the substrate to the target site where the drug exerts its effect are known as solute carrier (SLC) transporters. Transporters that mediate the efflux of drugs and transport drugs and endogenous substance using the energy from ATP hydrolysis are known as ATP binding cassette (ABC) transporters.

With advanced equipment, professional technicians and many years of R&D experience, IPHASE uses ABC transporter vesicles and SLC transporter cell products to help the drug transport research.



Human ABC Transporter Vesicle

Description	Strain	Unit Size
IPHASE Human BCRP Vesicles	5mg/mL	0.5 mL
IPHASE Human BSEP Vesicles	5mg/mL	0.5 mL
IPHASE Human MDR1 Vesicles	5mg/mL	0.5 mL
IPHASE Human MRP1 Vesicles	5mg/mL	0.5 mL
IPHASE Human MRP2 Vesicles	5mg/mL	0.5 mL
IPHASE Human MRP3 Vesicles	5mg/mL	0.5 mL
IPHASE Human MRP4 Vesicles	5mg/mL	0.5 mL
IPHASE Human MRP8 Vesicles	5mg/mL	0.5 mL

Human SLC Transporter Cells

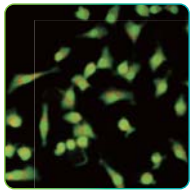
Description	Unit Size
IPHASE Human OATP1B1 SLC Transporter Cells	8~10million cells
IPHASE Human OAT1 SLC Transporter Cells	8~10million cells
IPHASE Human OAT3 SLC Transporter Cells	8~10million cells
IPHASE Human OCT2 SLC Transporter Cells	8~10million cells
IPHASE Human OATP1B3 SLC Transporter Cells	8~10million cells
IPHASE Human OATP2B1 SLC Transporter Cells	8~10million cells
IPHASE Human OCT1 SLC Transporter Cells	8~10million cells
IPHASE Human NTCP SLC Transporter Cells	8~10million cells
IPHASE Human MATE1 SLC Transporter Cells	8~10million cells
IPHASE Human MATE2K SLC Transporter Cells	8~10million cells
IPHASE Human OATP1A2 SLC Transporter Cells	8~10million cells

Recombinant Enzyme

Recombinant enzyme is developed by integrating genes that regulate the expression of an enzyme into Escherichia coli or insect cells using genetic and cell engineering. These cells are then cultured to express high levels of the enzyme of interest, which is then isolated and purified to obtain a single isozyme with high purity. It can be used to identify the major enzyme isoforms involved in drug metabolism, drug metabolism polymorphism and drug metabolic interactions. Its biggest feature is the ability to use a single isoenzyme with high purity for *in vitro* drug metabolism studies and to elucidate the species differences in drug metabolism by comparing the metabolism through genetically recombined liver enzymes between humans and animals.

Through its advanced equipment, professional technicians and years of R&D experience, IPHASE possesses recombinant CYP enzymes and recombinant UGT enzymes products to help the drug metabolism research.



Recombinant CYP Enzymes

Description	Concentration	Unit Size
IPHASE Human CYP1A2 + reductase Recombinant Enzymes	1nmol/mL	0.5mL
IPHASE Human CYP2A6 + reductase Recombinant Enzymes	1nmol/mL	0.5mL
IPHASE Human CYP2B6 + reductase Recombinant Enzymes	1nmol/mL	0.5mL
IPHASE Human CYP2C8 + reductase Recombinant Enzymes	1nmol/mL	0.5mL
IPHASE Human CYP2C9 + reductase Recombinant Enzymes	1nmol/mL	0.5mL
IPHASE Human CYP2C19 + reductase Recombinant Enzymes	1nmol/mL	0.5mL
IPHASE Human CYP2D6 + reductase Recombinant Enzymes	1nmol/mL	0.5mL
IPHASE Human CYP2E1 + reductase Recombinant Enzymes	1nmol/mL	0.5mL
IPHASE Human CYP3A4 + reductase Recombinant Enzymes	1nmol/mL	0.5mL
IPHASE Human CYP1A1 + reductase Recombinant Enzymes	1nmol/mL	0.5mL
IPHASE Human CYP3A5 + reductase Recombinant Enzymes	1nmol/mL	0.5mL

Recombinant UGT Enzymes

Description	Concentration	Unit Size
IPHASE Human UGT1A1 Recombinant Enzymes	5mg/ml	0.5mL
IPHASE Human UGT1A3 Recombinant Enzymes	5mg/ml	0.5mL
IPHASE Human UGT1A4 Recombinant Enzymes	5mg/ml	0.5mL
IPHASE Human UGT1A6 Recombinant Enzymes	5mg/ml	0.5mL
IPHASE Human UGT1A7 Recombinant Enzymes	5mg/ml	0.5mL
IPHASE Human UGT1A8 Recombinant Enzymes	5mg/ml	0.5mL
IPHASE Human UGT1A9 Recombinant Enzymes	5mg/ml	0.5mL
IPHASE Human UGT1A10 Recombinant Enzymes	5mg/ml	0.5mL
IPHASE Human UGT2B7 Recombinant Enzymes	5mg/ml	0.5mL
IPHASE Human UGT2B15 Recombinant Enzymes	5mg/ml	0.5mL
IPHASE Human UGT2B17 Recombinant Enzymes	5mg/ml	0.5mL

Reference Standards

In vitro metabolism standards are an indispensable part of metabolism research. IPHASE has probe substrates, corresponding metabolites, and inhibitors of each drug metabolizing enzyme, substrates and inhibitors associated with each transporter, as well as the corresponding coenzymes required for enzymatic reactions specified in the US FDA guidelines for Drug-Drug Interaction.

CYP Enzyme	Probe Substrates	Product of Metabolism	Inhibitor
CYP1A2	Phenacetin	Acetaminophen	α-Naphthoflavone
CYP2A6	Coumarin	7-Hydroxycoumarin	Pilocarpine
CYP2B6[c]	Bupropion Hydrochloride	Hydroxybupropione	Ticlopidine[b]
CYP2C8	Paclitaxel/Amodiaquine	6-Hydroxypaclitaxel /N-deethylation amodiaquine	Quercetin/ Montelukast
CYP2C9	1-(2,6-Dichlorophenyl)-2-indolinone	4'-Hydroxydiclofenac	Sulfaphenazole
CYP2C19[c]	(S)-(+)-Mephenytoin	(+/-)4-Hydroxymephenytoin	Nootkatone、Ticlopidine[b]
CYP2D6	Dextromethorphan Hydrobromide	Dextrorphan d-tartrate	Quinidine
CYP2E1	Chlorzoxazone	6-Hydroxychlorzoxazone	Sodium diethyldithiocarbamate
CYP3A4/5[a]	Midazolam/Testosterone	1'-Hydroxy Midazolam /6β-HydroxyTestosterone	Ketoconazole

Note: a. Two different substrates are recommended to evaluate the inh ibition of CYP3A4/5.
b. Time-dependent inhibitors.
c. No specific inhibitors of CYP2C19 and CYP2B6 were available *in vitro*.

Description	Anticoagulant	Unit Size
IPHASE Human Plasma, PPB	EDTA-K_2、Heparin sodium	5ml
IPHASE Monkey(Cynomolgus) Plasma, PPB	EDTA-K_2、Heparin sodium	5ml
IPHASE Dog(Beagle) Plasma, PPB	EDTA-K_2、Heparin sodium	5ml
IPHASE Rat(Sprague-Dawley) Plasma, PPB	EDTA-K_2、Heparin sodium	5ml
IPHASE Mouse(ICR/CD-1) Plasma, PPB	EDTA-K_2、Heparin sodium	5ml

Plasma-Related Products

Advantages

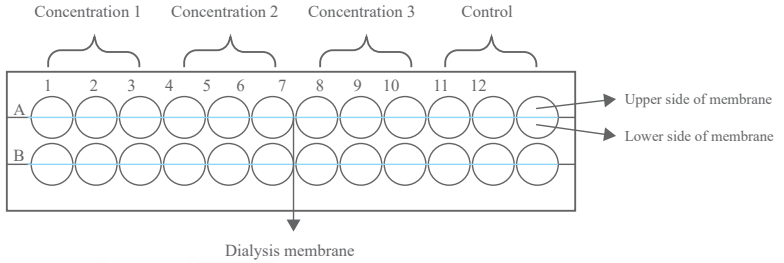
- Multiple species: Plasma with different anticoagulants from humans, monkeys, dogs, rats, and mice are provided to meet the needs of customers.
- Specific blood collection method: The plasma is separated from blood collected from the heart, which is more suitable for ADME studies.
- Safety: Animals from which plasma is collected have been tested for infectious agents, which makes the plasma safe for use.
- Traceability: A traceability proof can be provided to alleviate customer concerns.
- Customization: In addition to plasma from conventional species, the company provides customized plasma from special species according customer needs.

Plasma Protein Binding-Related Products

Plasma protein binding (PPB) rate is the amount of a drug bound to proteins in the blood as a percent of total amount of drug, which reflects the extent of binding between the drug and plasma proteins. The binding of drugs to the plasma proteins has an important impact on the distribution and transport of drugs in the body, and is an important link in the process of new drug development. It is difficult for drugs to pass through the blood vessel wall when bound to plasma proteins. Therefore, protein-bound drugs usually have no pharmacological activity. In contrast, free unbound that drugs easily permeate through the cell membrane, are closely associated with drug metabolism, excretion and efficacy, and has important clinical significance.

According to the demand of plasma protein binding test, IPHASE has launched special plasma of different species for the test, which provides a reliable guarantee for the smooth progress of drug research and development.

At the same time, based on the balanced dialysis method, IPHASE has developed a balanced dialysis device that can be used manually and also applicable to automatic equipment. In combination with dialysis membranes with different molecular weight intercepted verified by internal quality control.

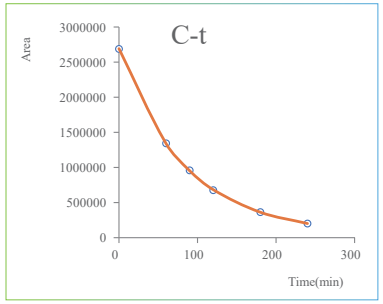


Description	Unit Size
IPHASE PPB Dialysis System	96-well
IPHASE Dialysis Membrane	12~14KD，25KD，50KD

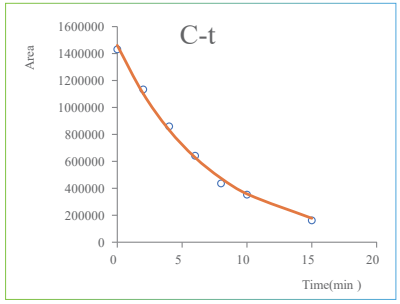
Plasma Stability-Related products

Although the hepatic metabolic stability of compounds is generally considered to be one of the most important challenges in drug discovery, the plasma stability of compounds is still an important factor in the development of new drugs. Plasma stability of compounds is sometimes inconsistent with hepatic metabolic stability, which is often an overlooked issue. The metabolic enzymes in the liver are different from those in the blood. In stability assessment, the compound is stable in the liver *in vitro* metabolic enzymes does not mean that it is also stable in the plasma. Therefore, it is of great significance to study the plasma stability of lead compounds in the development of new drugs.

According to the requirements of plasma stability test,IPHASE screened out the plasma that meets the test requirements, guaranteeing smooth progress of the test.



Test results of monkey plasma stability of a drug



Test results of rat plasma stability of a drug

Description	Anticoagulant	Unit Size
IPHASE Human Plasma,Stability	EDTA-K_2、Heparin sodium	5ml
IPHASE Monkey(Cynomolgus) Plasma,Stability	EDTA-K_2、Heparin sodium	5ml
IPHASE Dog(Beagle) Plasma,Stability	EDTA-K_2、Heparin sodium	5ml
IPHASE Rat(Sprague-Dawley) Plasma,Stability	EDTA-K_2、Heparin sodium	5ml
IPHASE Mouse(ICR/CD-1) Plasma,Stability	EDTA-K_2、Heparin sodium	5ml

Selected Customers

康龙化成 PHARMARON
昭衍 JOINN
MEDICILON 美迪西生物医药
药明康德 WuXi AppTec
益诺思 INNOSTAR
Henlius
INNOCARE
华润医药 CR PHARMA
甘李
恒瑞
ChemPartner Dedicated to LifeScience
Luye Pharma 绿叶制药
CSPC 石药集团
齐鲁制药 QILU PHARMACEUTICAL
BeiGene
中国食品药品检定研究院
清华大学 Tsinghua University
北京大学 PEKING UNIVERSITY
中国医学科学院 北京协和医学院
CFSA 国家食品安全风险评估中心 China National Center for Food Safety Risk Assessment