

Liquid Chromatography - Tandem Mass Spectrometry System PreMed 5200





Designed to provide customized clinical mass spectrometry solutions

Founded in 2020, EXPECLIN is a high-tech enterprise integrating R&D, production and sales of clinical mass spectrometers, supporting equipment and reagents, as well as providing related technical services, consulting services, third-party medical testing services and scientific research services.

The EXPECLIN's R&D system is based on 20-year technology accumulation of Focused Photonics Inc. and EXPEC Technology. With the support of major scientific instrument project of Ministry of Science and Technology, 863 Program and other major science and technology projects, EXPECLIN has mastered mass spectrometry technologies such as ion trap, quadrupole, triple quadrupole and time-of-flight in the field of high-end mass analyzer. The performance of mass-produced equipment has reached the international advanced level of the same kind.

EXPECLIN will wholeheartedly provide customers with integrated, automated, standardized and streamlined clinical mass spectrometry solutions, enabling customers to enjoy one-stop customized services.

► Tailor-made for clinical mass spectrometry



More stable

Excellent stability: Meet the daily uninterrupted testing needs of clinical testing

- Ion source and ion interface with efficient desolvation, improving anti-interference ability
- The closed-loop adaptive adjustment technology of dual RF power supply improves the stability of RF power supply for quadrupole
- Innovative anti-temperature and humidity alternating technology, with a larger range of temperature and humidity

Time saving

Improve analysis efficiency: Fast detection speed, less maintenance time, high inspection throughput

- Short single sample analysis time and fast detection speed with ultra-high pressure liquid chromatography
- Intelligent and fast instrument status diagnosis, ensuring longer trouble-free operation time of equipment
- Maintenance-friendly design, making maintenance easy and efficient

More accurate

Excellent sensitivity: Suitable for the analysis of trace substances in biological samples

- New Step Scan ion transmission technology, effectively improving ion transmission efficiency
- Innovative axial acceleration collision cell technology, greatly improving collision efficiency
- Innovative pulse counting detection technology, without damaging the detected ion signal and effectively filtering noise interference

Effort saving

One-stop purchase experience: Multiple supporting packages, complete categories, solving compatibility problems

- Automatic sample pretreatment system, saving manpower and avoiding human errors
- On-line solid phase extractor (optional), avoiding cumbersome operations and saving cost
- Clinical mass spectrometry kit, compatible with mainstream mass spectrometry equipment, better effect

More convenient

Convenient human-machine interaction: Make daily inspection and LDT development more convenient

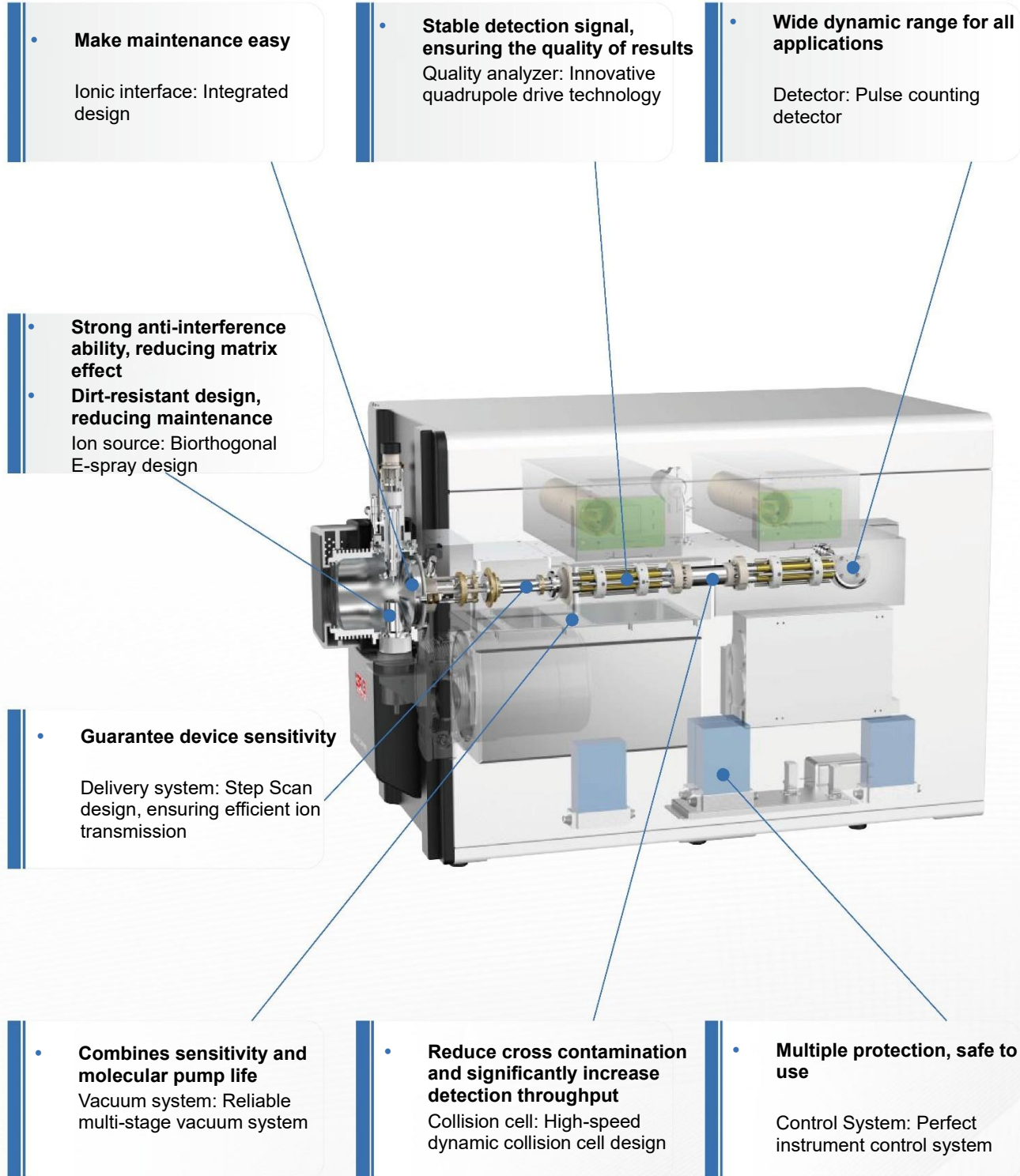
- Process operation and management, easy to operate
- Self-developed workstation, brand-new user experience, easy to learn and understand
- Automated method development and optimization, facilitating the development and verification of LDT project

More peace of mind

Intimate after-sales service: Professional, fast localized service

- Innovative design, extreme durability
- Localized professional technology and after-sales service team, with fast response
- Spare parts produced by the original factory, double guarantee of quality and supply

Mass spectrometry system: Innovative design for superior performance and extreme durability



➤ Automatic sample pretreatment system

It integrates robotic arm, precision movement, high-precision injection and corresponding control technology, and is highly modular and integrated. Combined with UHPLC-MS/MS, it can realize fully automatic analysis of complex samples, especially suitable for high-throughput and multi-item detection applications of clinical liquid samples



Automatic sample pretreatment system

■ No cross-contamination of samples/reagents

- The sample pretreatment unit adopts a pneumatic pipette with replaceable Tip. The disposable pipette Tip is suitable for the sample distribution and reagent transfer, without the problem of sample/reagent cross-contamination interference

■ Flexible application scenarios

- Modular hardware design and componentized software design, realizing one product configuration to support ten detection indicators (vitamins, fatty acids, amino acids, psychotropic drugs, etc.) and achieving multi-purpose, cost-effective

■ Unattended operation all the way

- Integrated automatic sampler, truly realizing the full automatic process from pretreatment to mass spectrometry injection

■ Rich configuration modules

- The sample pretreatment unit is equipped with a variety of modules such as code scanner, cap opener for blood collection tubes, multi-channel pipette, centrifuge, oscillator, refrigerated reagent compartment, and autosampler, which can meet the complex pretreatment operations of body fluid samples

■ Single-tube sample processing mode, with sample inspection upon arrival

- The single-tube sample processing mode is adopted to avoid conditional restrictions such as sample storage/sample collection, so as to truly achieve "sample inspection upon arrival"

■ Automatic safety warning system

- Built-in leakage warning/safety warning/abnormal operation warning/low consumables warning, etc., ensuring the stable operation of the instrument

■ Higher efficiency and more accurate results

- The efficiency of pretreatment is higher and the error caused by human operation can be avoided

■ High safety

- With fully enclosed working space, the sample pretreatment unit is equipped with a vacuum blood collection tube automatic cover opening/closing module, which supports sample loading with a cover on the blood collection tube. The system automatically realizes the operations of opening, sampling, and closing the blood collection tube, greatly reducing sample aerosol contamination risk;

▶ Liquid chromatography system

■ Binary solvent tube

- Maximum withstand pressure > 18000 psi, significantly improving the separation effect and speed
- Low pressure fluctuation: Pressure fluctuation is less than 1%
- Wide flow rate range and high flow accuracy

■ Injection system management

- The temperature is controllable. Low to 4°C for injection, customized for clinical samples
- Match multiple types of sample trays: 48-bit, 96-well plate, 10mL, etc.
- It can integrate fully automatic sample pretreatment system to realize uninterrupted single tube sample injection

■ Column management

- Accommodate 6 columns (expandable)
- With the pre-column switching valve, fast switching between columns can be achieved, reducing item switching time and cumbersome operations
- With the post-column switching valve, the anti-contamination ability of the mass spectrometer is significantly improved



▶ On-line SPE module

It is an excellent tool for automatic analysis of trace substances in complex matrix with high accuracy and high efficiency

The double SPE column alternate technology is used to effectively solve the cumbersome problem of off-line SPE method, and maximize the detection efficiency and result accuracy of complex matrix, especially suitable for automatic analysis of blood samples

- The SPE column can be reused to save consumable costs
- High sample utilization rate (100%, high sensitivity)
- Equip with automatic sampler, realizing large volume injection (10ml)
- Double column alternating operation, improving instrument utilization efficiency
- Online automatic enrichment, reducing human error
- Strong anti-contamination ability, with stable and reliable data



▶ Post-column switching valve

- Adopt two-position six-way valve design with RS232 serial communication control
- The samples are only collected by mass spectrometer during the peak period of the chromatogram, and the mobile phase is discharged into waste liquid during the remaining peak-free period, so as to reduce the contamination of sample matrix to the mass spectrometer and prolong the cleaning and maintenance cycle of mass spectrometer



Powerful and friendly analysis workstation

All analysis workstation developed based on habit of English expressions

- Brand-new user experience, easy to learn and understand
- Convenient and intuitive analysis data statistics and trend icon display
- Powerful high-throughput data batch analysis software to realize unattended analysis

Integrated control software made simple

- Integrated control of automatic pretreatment equipment, ultra-high performance liquid chromatography and mass spectrometry and other related equipment
- Real-time monitoring of the main equipment and associated equipment status, effectively reducing the difficulty of diagnosis and maintenance
- One-key automatic tuning and quality calibration, reducing use difficulty

Parameter adjustment tool designed for LDT development

- Automated method optimization, speeding up the method development process
- Customized technical support service



Instrument configuration

Sequence editing

Method edit

Data collection

Real-time chromatogram viewing

Alarm reminding

Real-time status monitoring

Vacuum control

Auxiliary equipment and reagents, consumables



Supporting LC/MS kits
(complete category)



Chromatographic column



High-speed refrigerated centrifuge




Nitrogen generator

▶ Excellent performance and wide application

PreMed 5200 improves the reliability of qualitative and quantitative analysis by providing stable and accurate data, and is suitable for routine testing and method development

- Routine clinical sample testing:
 - Screening items such as newborn inherited metabolic disease screening
 - Diagnostic items such as catecholamines, steroid hormones, bile acid subtypes
 - Monitoring items such as therapeutic drug monitoring
- Development of clinical laboratory developed test (LDT)

|  |  |  |  |  |
|--|--|---|---|---|
| Nutrition assessment | Drug concentration monitoring | Endocrine-related drugs | Inherited metabolic diseases | Small protein/polypeptide |
| <ul style="list-style-type: none"> • Fat-soluble vitamin • Water-soluble vitamin • Organic acid • Amino acid • Free fatty acid • Homocysteine • | <ul style="list-style-type: none"> • Psychotropic drug • Immunosuppressant • Cardiovascular drug • Antibiotic drug • Anti-tumor drug • | <ul style="list-style-type: none"> • Steroid hormone • Catecholamines • Renin activity - angiotensin • Bile acid • | <ul style="list-style-type: none"> • Screening for inherited metabolic diseases of the newborn: More than 40 kinds of inherited metabolic diseases can be screened in one test: <ul style="list-style-type: none"> Amino acid metabolism disorder Organic acid metabolism disorder Fatty acid metabolism disorder • | <ul style="list-style-type: none"> • Insulin • IGF-1 • Thyroglobulin • Hemoglobin • Angiotensin • |



Reliable professional service and technical support

Excellent after-sales service

- Standardized process design, providing the most intimate after-sales service
- Localized professional after-sales service team to quickly respond to your various needs
- Localized original spare parts inventory, with complete categories
- Low-cost maintenance expenditure, from design concept, R&D and production to follow-up service



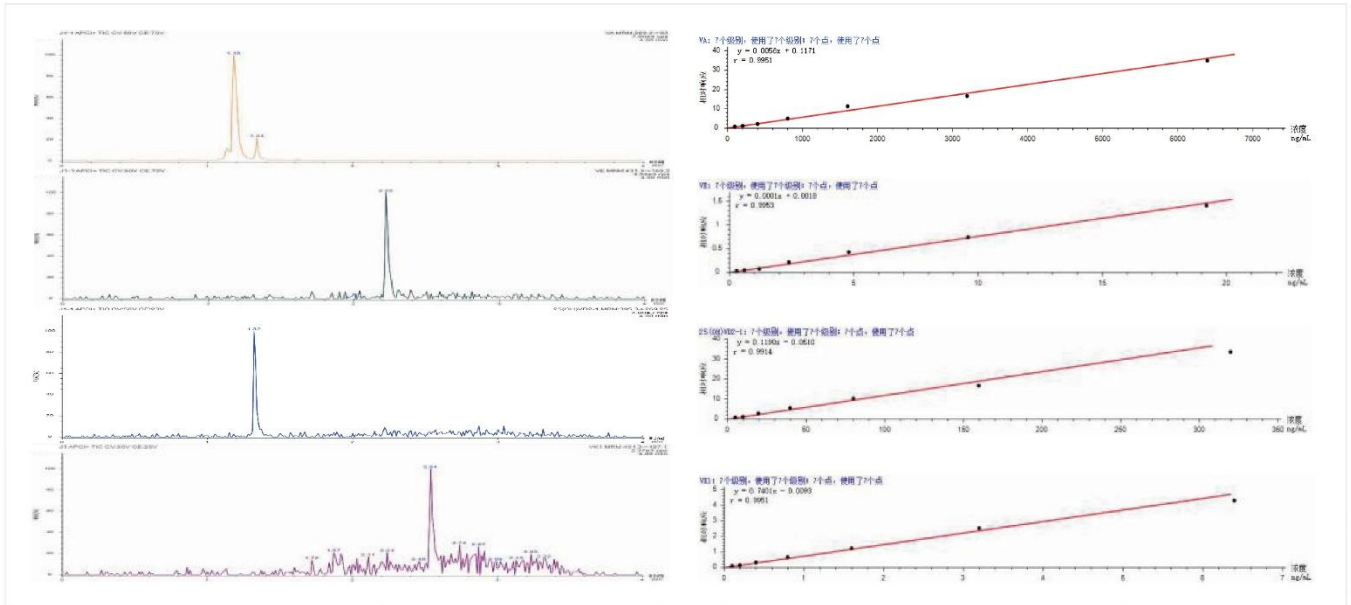
Professional technical support

- **Systematic training system**
Systematic and professional communication and training from principle of mass spectrometry, equipment repair and maintenance, to method development and verification, and then to clinical application and result interpretation
- **Diversified value-added services**
Diversified value-added services from clinical mass spectrometry laboratory design, to machine selection, and then to project development and quality management
- **Customized technical support**
LDT project developed in cooperation

Application cases

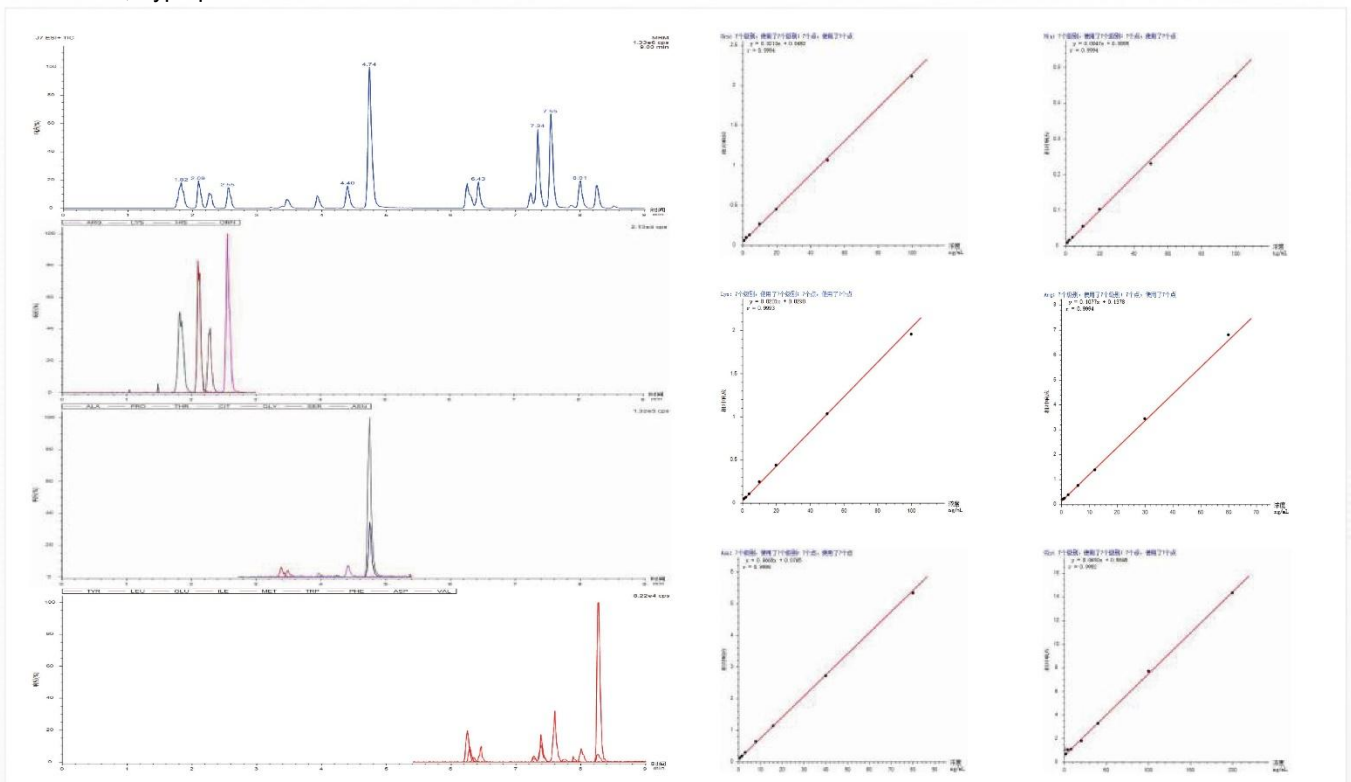
Determination of fat-soluble vitamin content in serum

PreMed 5200 is used to determine vitamin A, 25-hydroxy-vitamin D2, 25-hydroxy-vitamin D3, vitamin E and vitamin K1 in serum, providing the basis for the diagnosis and treatment of related diseases and nutritional evaluation and fully meeting the needs of clinical testing.



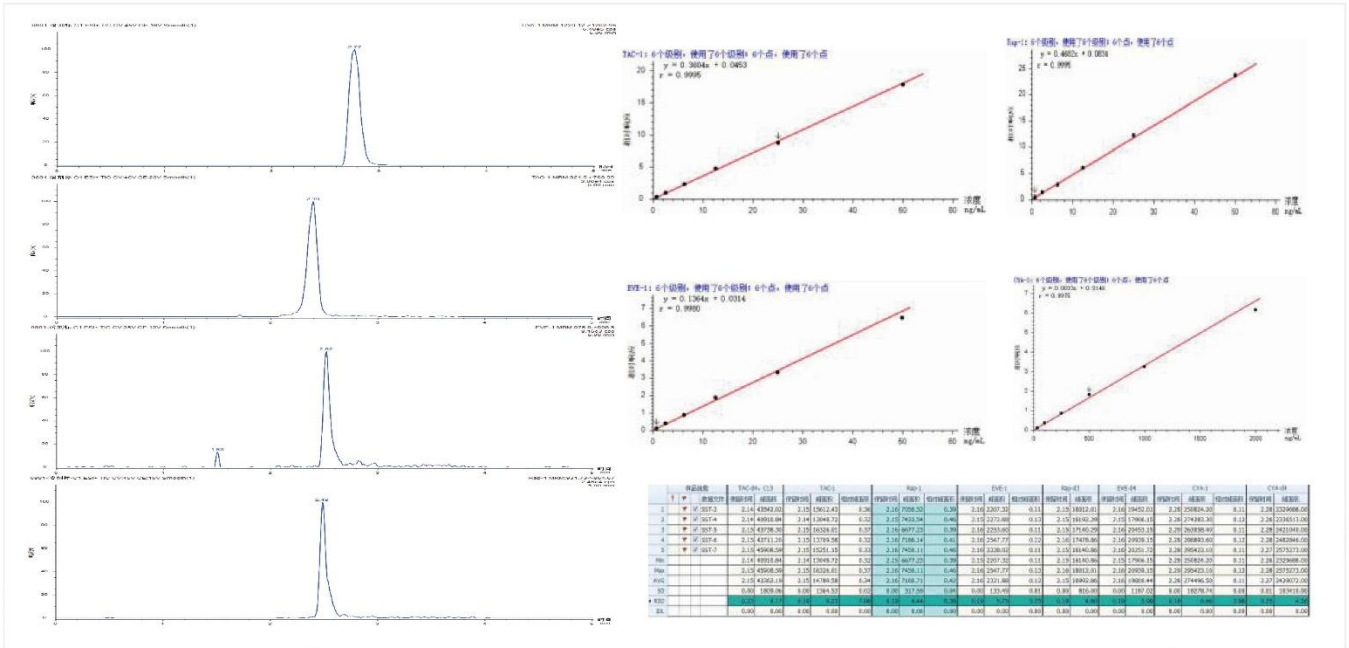
Quantitative determination of 20 amino acids in serum

PreMed 5200 is used to quantitatively test the contents of 20 amino acids including phenylalanine, methionine, serine, tryptophan and valine in serum.



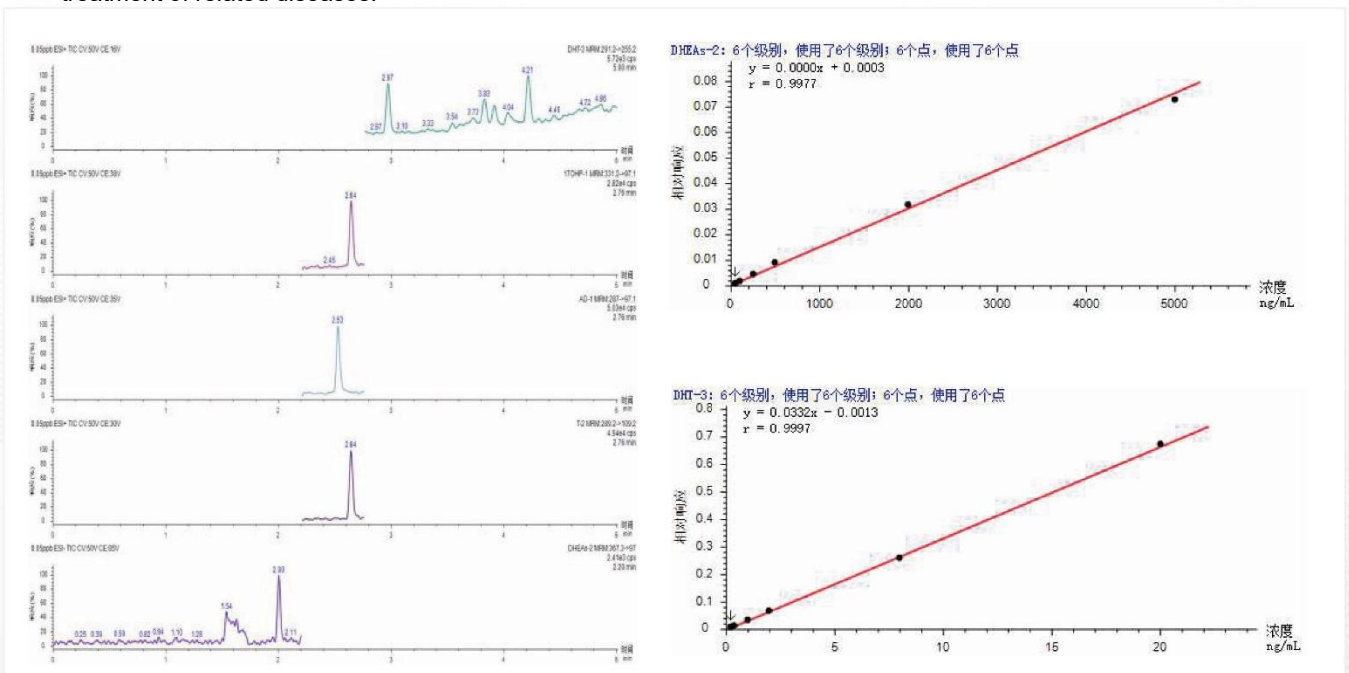
Therapeutic drug monitoring - Immunosuppressant

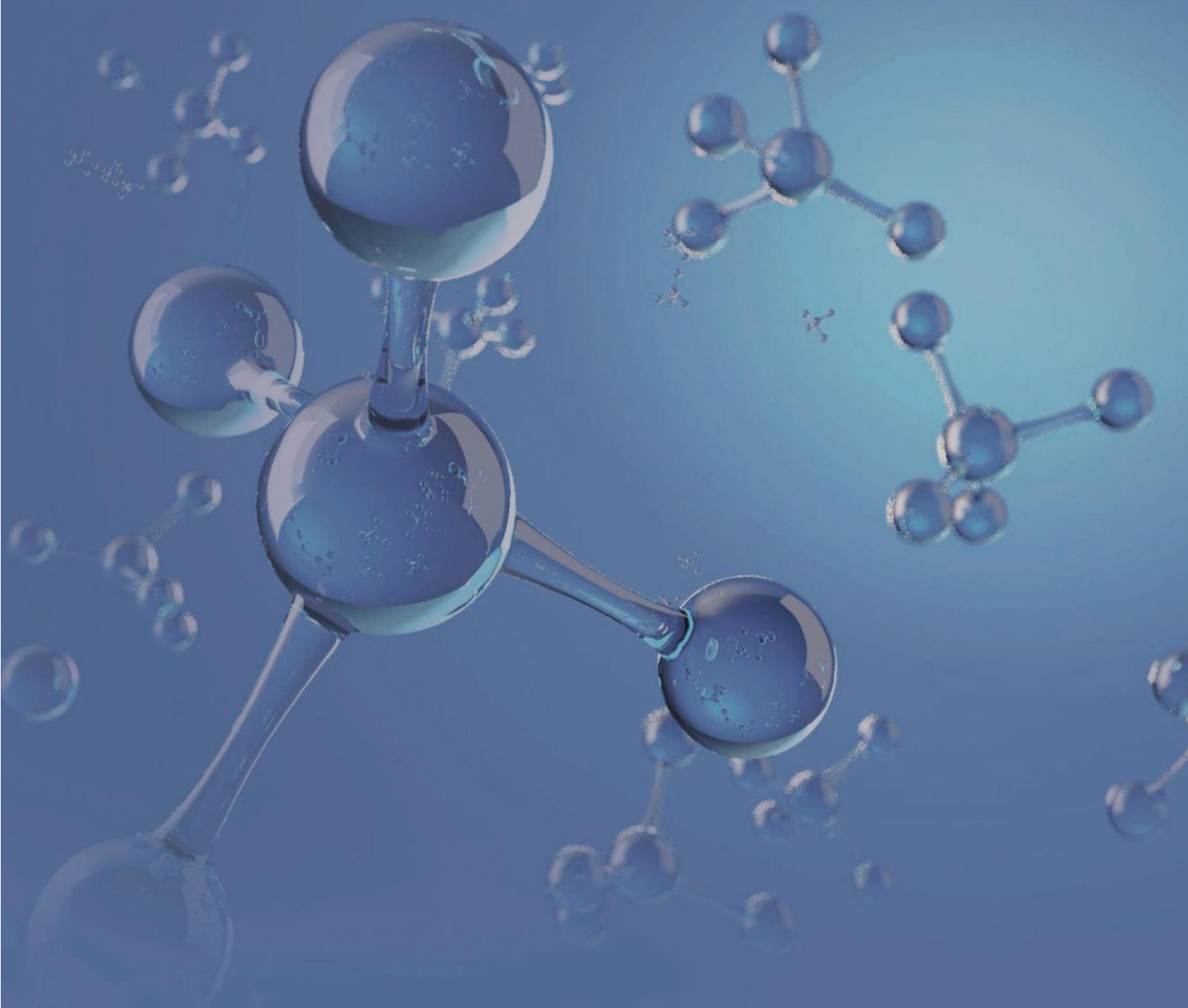
PreMed 5200 is used to quantitatively detect the contents of tacrolimus, sirolimus, cyclosporin A and everolimus in whole blood, providing the basis for the safe and effective use of these immunosuppressants.



Determination of steroid hormone content

PreMed 5200 is used to quantitatively detect steroid hormone content in blood, providing the basis for diagnosis and treatment of related diseases.





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