Technical Standards

1. Gastro-intestinal simulation device is based on the in vivo digestive system.
   - *Using computer program control, the enzyme activity, pH and hydrolysis environment in digestive fluid; are simulated to match the physiological conditions of the stomach, small intestine and large intestine;*
   - *Simulates enzymatic digestion processes of the stomach, small intestine and large intestine;*
   - *Simulates the secretion of digestive fluid in the body;*
   - *Simulates the ambient temperature and chyme mixing processes in the digestive tract.*

2. Ability to perform simulating digestion based on the analysis of digestive substances.
   - *Simulates the mixing of chyme in the digestive tract through shaking and stirring; The stirring speed can be precisely controlled;*
   - *After the entire digestion process, the liquid evaporation volume of the reaction system is maintained at less than 1.0% (vertical digestion module);*
   - *A computer program-controlled system regulates digestive fluid secretion, maintains constant temperature, and controls digestive process.*

3. Able to perform simulating digestion and absorption based on analysis of undigested substances.
   - *Simulates the digestion and absorption of nutrients in the gastro-intestinal tract;*
   - *Overcomes the issue of filtration in traditional methods, eliminating the need for sample transfer after loading;*
   - *Automatically performs various stages of digestion in the stomach, small intestine and large intestine;*
   - *Automatically cleans products and reduces system errors caused by manual operations;*
   - *A Computer program-controlled system regulates digestive fluid secretion, cleans hydrolysates, maintains constant temperature, and controls the digestion process.*

4. The coefficient of variation (CV) for the determination of 5 repeated samples does not exceed 1.5%.

5. Using a constant temperature water bath and a constant temperature air bath to simulate the environmental temperature of the digestive organs. The temperature variation can be precisely controlled within 0.4°C, ranging from 30 to 45°C.

6. The shaking frequency can be controlled within the range of 100 to 200 rpm, with an accuracy of ±5 rpm.

7. The flow rate of buffer solution and water for product cleaning can be controlled within 100 to 500 mL/min, with an accuracy of ±20 mL/min.

8. The flow rate of digestive fluid can be controlled within 0.5 to 10 mL/min, with an accuracy of ±0.1 mL/min.

9. The loading capacity of the simulated digester: vertical digestion module ≥0.5g; horizontal digestion module ≥1.0g. Each digestion experiment can analyze 2 samples simultaneously, with each sample providing 5 repeated test data.

10. Features automatic cleaning of the digested products.