Lipoprotein Analyzing Method

Lipoproteins are a hydrophilic carrier of cholesterol and triglyceride to flow in the blood stream. They are classified into 4 major classes: CM (chylomicron), VLDL (very low density lipoprotein), LDL (low density lipoprotein) and HDL (high density lipoprotein). Studies have shown that both quantitative and qualitative evaluations on lipoproteins are important in detecting the early stage of diseases and controlling human health.

The technology partner has found a method to analyze lipoprotein. This method is able to deliver a complete set of data on cholesterol and triglyceride levels of lipoprotein components, including 4 major classes and 20 subclasses. Using a unique Gel-Permeation High-Performance Liquid Chromatography (GP-HPLC) and patented analyzing algorithm, this technology offers a number of advantages over conventional testing methods such as very small sample requirement, broad coverage of sample types, accurate size-based particle level measurement. The technology partner is also able to provide the particle number.

Potential Applications

This technology is a useful analyzing tool for evaluating drug efficacy and mechanism in disease such as hyperlipemia, arteriosclerosis, cardiovascular diseases, cerebral stroke, diabetes, metabolic syndrome, NASH (non-alcoholic steatohepatitis), NAFLD (non-alcoholic fatty liver disease), hepatitis, depression and Alzheimer’s Diseases.

This can also be useful for R&D of functional food for dieting, Veterinary Practice etc.

Customer Benefits

There are many advantages in using this technology for clinical and animal research:

1. Provides detailed lipoprotein profiling data.
2. Requires only tiny amount of blood samples (Human: 45µL / Animal: 35µL), hence suitable for any research using small animal samples e.g. from mice.
3. High reproducibility because of the applied technology: GP-HPLC.
4. Any animal samples such as rabbit or monkey can be applied.
5. Low concentration samples such as medium or CSF also can be applied.

Technology Features & Specifications

To provide scientists, researchers and clinicians with more meaningful analysis data, this method employs two unique technologies; GP-HPLC and its proprietary data processing algorithm. Lipoprotein profiling is performed in the following three steps.

Step 1: The sample is loaded into a gel permeation column specifically designed for separating lipoprotein components. Then, lipoprotein is eluted from the column in order of larger particles to smaller ones.

Step 2: Lipoprotein fractionated by particle size is fed into reaction coils, and the degraded products after reacting with reagents are sent to detectors. The levels of cholesterol and triglyceride are output in the form of the chromatogram.

Step 3: The data obtained is processed with the patented analyzing program. The final output is a composite chromatogram and numeric data on 4 major classes (CM, VLDL, LDL, and HDL) and 20 subclasses.

Market Trends and Opportunities

The researchers are targeting on the application of this technology for use in R&D of Dyslipidemia Drug. The industry was approx. 18 Bil USD in 2014 according to the American Heart Association and the population of high blood cholesterol in USA (aged 20 and above) was approx. 99 million people in 2013.

For more information on technologies we have to offer, please visit our website at https://www.ipi-singapore.org or enquire at techscout@www.ipi-singapore.org