

LipoSEARCH® celebrates its 20th anniversary in July 2023


【LipoSEARCH®: Technical Basis】

LipoSEARCH®, using Gel Permeation HPLC (GP-HPLC) for Lipoprotein profiling technics, was developed by Dr. Mitsuyo Okazaki et al from their research in the 1980's (1). The system was established to determine the cholesterol and triglycerides concentration in four major fractions (CM, VLDL, LDL, and HDL) and their subclasses, as well as the particle size from peak detection times (2-5), by their original program with the modified Gaussian curve fitting analysis. Recently, evaluating the number of lipoprotein particles based on the theory of the spherical particle model (6) become available. The method has been internationally recognized as a one of the advanced lipoprotein analysis methods (7, 8).

Dr. Mitsuyo Okazaki *Professor emeritus of Tokyo Medical and Dental University
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 *LipoSEARCH® Senior Technical Advisor of Immuno-Biological Laboratories Co.,Ltd.


- 1) High-performance aqueous gel permeation chromatography of human serum lipoproteins
 Mitsuyo Okazaki et al., *J Chromatogr* 1980 Dec 12;221(2):257-64.



- 2)  Assessment of between-instrument variations in a HPLC method for serum lipoproteins and its traceability to reference methods for total cholesterol and HDL-cholesterol
 Shinichi Usui et al., *Clin Chem* 2000 Jan;46(1):63-72.


- 3) A new on-line dual enzymatic method for simultaneous quantification of cholesterol and triglycerides in lipoproteins by HPLC
 Shinichi Usui et al., *J Lipid Res* 2002 May;43(5):805-14.



- 4)  Identification of unique lipoprotein subclasses for visceral obesity by component analysis of cholesterol profile in high-performance liquid chromatography
 Mitsuyo Okazaki et al., *Arterioscler Thromb Vasc Biol* 2005 Mar;25(3):578-84.


- 5) Component analysis of HPLC profiles of unique lipoprotein subclass cholesterols for detection of coronary artery disease
 Mitsuyo Okazaki et al., *Clin Chem* 2006 Nov;52(11):2049-53.



- 6)  Recent Advances in Analytical Methods on Lipoprotein Subclasses: Calculation of Particle Numbers from Lipid Levels by Gel Permeation HPLC Using "Spherical Particle Model"
 Mitsuyo Okazaki and Shizuya Yamashita, *J Oleo Sci* 2016;65(4):265-82.

- 7) Small dense low-density lipoprotein: Analytical review
 Christina Kanonidou *Clin Chim Acta* 2021 Sep;520:172-178.



- 8)  Lipoprotein Assessment in the twenty-first Century
 Diego Lucero et al., *Endocrinol Metab Clin North Am* 2022 Sep;51(3):459-481.

LipoSEARCH® is an advanced “lipoprotein profiling service” based on GP-HPLC technics and a unique data analysis algorithm developed by Dr. Mitsuyo Okazaki.

Skylight Biotech Inc. commercialized **LipoSEARCH®** in July 2003, Immuno-Biological Laboratories Co., Ltd. (IBL) took over in November 2021, and continues the business ever since.

The service has been used in a broad range of research fields, such as medical, pharmacology, nutrition, veterinary medicine, and over 550 scientific papers have been published. Moreover, **LipoSEARCH®** has been used in the development of drugs for life-style related diseases, the development of functional supplemental foods, and clinical studies.

【LipoSEARCH®: Method】

LipoSEARCH®; Analytical GP-HPLC method for lipoprotein profiling and its applications

Gen Toshima et al

J Biol Macromol 2013;13(2):21-32.



【LipoSEARCH®: Analysis Principles】

Serum/plasma is injected to GP-HPLC to separate lipoproteins. Chromatograms of cholesterol and triglycerides of each lipoprotein fraction are obtained by post-column enzymatic reaction, and the following detailed data are provided by analysis using a dedicated computer program.

【LipoSEARCH®: Data Items】

	Cholesterol mg/dL	Triglyceride mg/dL	Particle size nm	Particle number nM
Total	●	●		
CM	●	●	●	●
VLDL	●	●	●	●
LDL	●	●	●	●
HDL	●	●	●	●
VLDL subclasses	●	●		●
LDL subclasses	●	●		●
HDL subclasses	●	●		●

【LipoSEARCH®: Features & Benefits】

- ◆ Require only a small amount of serum/plasma
- ◆ No need of sample pretreatment
- ◆ Any animal species of sample is applicable
- ◆ Provide detailed lipoprotein profiling data
- ◆ Can be identified lipoprotein fractions and lipids on which drug acts

Learn More: **LipoSEARCH®** →

This service is for research purposes only.
It cannot be used for clinical diagnostic purposes.

Information



Video

