

Newly developed profiling of lipoproteins by PAGE to determine the heterogeneity of low-density lipoproteins (LDLs)

<sup>1</sup>Department of Rehabilitation, Kamagaya General Hospital, Chiba, Japan <sup>2</sup>Department of Diabetes and Endocrinology, Saitama Medical University, Saitama, Japan <sup>3</sup>Department of Biochemistry, Saitama Medical University, Saitama, Japan <sup>4</sup>ASKA Special Laboratory CO., LTD., Kanagawa, Japan

Yuichi Shinoda<sup>1</sup>, Ikuo Inoue<sup>2</sup>, Takanari Nakano<sup>3</sup>, Makoto Seo<sup>3</sup>, Seiichiro Takahashi<sup>4</sup>, Takuya Awata<sup>2</sup>, Shigehiro Katayama<sup>2</sup>

**Aim:** To explore the potential of newly developed polyacrylamide-gel disc electrophoresis (PAGE) for lipoprotein profiling in clinical practice. **Design and Methods:** Blood samples were collected from 95 patients with metabolic syndrome. Lipid parameters were assayed by commercial (Lipophor) and newly developed PAGE (Lipophor AS), including small, dense low-density lipoprotein (LDL) (n = 41), and triglyceride-rich lipoprotein remnant cholesterol (n = 37). We also used a commercial kit to measure small, dense LDL (n = 41). **Results:** By PAGE, we obtained the percentage of the area under the curve (AUC %) of each peaks and calculated respective AUC% x total cholesterol (AUC%xTC) values. The calculated values of LDL-AUC%xTC, small LDL-AUC%xTC, and HDL-AUC%xTC values were correlated well with values from homogeneous assay for LDL-cholesterol, small, dense LDL-cholesterol, and HDL-cholesterol assays (r = 0.94, 0.81, and 0.89, respectively). Lipophor AS is better correlation between TG and VLDL than Lipophor (r = 0.77, and 0.85, respectively). **Conclusions:** PAGE combined with measurement of total cholesterol and triglycerides provides a rapid evaluation of anti- or pro-atherogenic lipoproteins and a simple profiling system for both the "quantity" and "quality" of lipoproteins, allowing a better assessment of the risk of coronary artery diseases.

