Correspondence

Separation of Plasma Lipoproteins

Ultracentrifugation has been used as the standard method for the separation of plasma lipoproteins.\(^1, 2\) The name of lipoproteins such as VLDL, IDL, LDL, and HDL comes from the density ranges of plasma lipoproteins. We can separate the subfractions of each plasma lipoprotein with ultracentrifugation, and we can easily analyze the chemical composition of each plasma lipoprotein fraction. The C/TG ratio of VLDL is generally 0.2 and this ratio ≥ 0.3 is one of the criteria for diagnosing type III hyperlipoproteinemia. When plasma VLDL levels are low, the C/TG ratio may increase. Ultracentrifugation is a time- and money-consuming technique and may destroy the lipoprotein molecules due to high gravity. Apo E is well known to detach from lipoprotein molecules during ultracentrifugation.

Column chromatography has been used for the separation of plasma lipoproteins\(^3-5\), and may not destroy lipoprotein molecules. Column chromatography is rather time consuming and not an appropriate method for analyzing the chemical composition of each lipoprotein fraction due to sample dilution.

Gel electrophoresis has also been used for plasma lipoprotein separation\(^6, 7\). This method needs only small amounts of samples; however, this method is not suitable for analyzing the chemical composition of plasma lipoproteins. Analysis of chemical composition has been tried by staining each chemical component.\(^8, 9\) The C/TG ratio of VLDL was very high in subjects of normal and type IIa hyperlipoproteinemia compared with those obtained with ultracentrifugation. TG in VLDL seems to be underestimated because of weak staining. The accuracy of this method may be low in subjects without hypertriglyceridemia. We have to check these points in the analysis with gel electrophoresis methods.

We must always consider the weak points of the method we use and select the most appropriate method for our own purposes.

References

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