

Abstract

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Remnant lipoprotein density profiling by CsBiEDTA density gradient ultracentrifugation.

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BACKGROUND: Remnant lipoproteins (RLPs) are now considered a strong marker of the triglyceride-rich lipoprotein (TRL) class for cardiovascular heart disease. The purpose of this research is to demonstrate the efficacy of a novel method that combines an established immunoseparation assay used to measure the RLP class in human serum with ultracentrifugal density gradient separation. These two methods are combined to obtain an RLP density profile.

METHODS: The immunoseparation effectively removes the non-RLP lipoproteins from serum. The RLPs obtained from the immunoseparation are separated into two density-distinct fractions by ultracentrifugal density gradient separation in CsBiEDTA. It is now clear that IDL is distinct in density and immunoreactivity from the two RLP classes isolated by the immunoseparation and ultracentrifugation. This methodology defines the RLP by density and measures their relative prevalence in the TRL class. When applied to clinical samples, variations in the RLP subclasses in different patients are examined. The differences in the RLP density profile are also examined in fasting and postprandial samples.

RESULTS: The RLP density profile significantly increases in the postprandial state versus the fasting state. However, the overall quantity of TRL does not appreciably increase in the postprandial state.

CONCLUSION: This work demonstrates the feasibility of measuring the postprandial state in clinical samples to provide insight into the clearance of RLP by the liver as well as the general atherogenicity of these particles. The major outcome of this research is a novel analytical method that couples immunoseparation and density gradient ultracentrifugation to separate and differentially profile the RLP subclass against its nascent counterparts in the TRL class.

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