

# RLP (Remnant Lipoprotein)

## What is RLP?

RLP is a very atherogenic lipoprotein composed primarily of very low density lipoproteins (VLDL) and intermediate density lipoproteins (IDL). Considered one of the most harmful lipoproteins, RLP (also called remnant-like particles) is very highly correlated with cardiovascular disease. In fact, studies show that the composition of arterial plaque closely resembles composition and density of RLP.

## Why measure RLP?

According to the National Cholesterol Education Program (NCEP), only about half of the variability in coronary heart disease risk can be attributed to conventional risk factors (i.e. LDL, HDL and triglyceride levels). Other, more specific risk factors, enhance predictive power of cardiovascular disease in individuals. RLP is one of these specific risk factors that may be independent of other lipid-related risk factors.

### NCEP Specific Risk Factors:

- Lp(a)
- **RLP**
- HDL2b
- Small-dense LDL

## Why is RLP so harmful?

Although RLP is relatively large compared to most LDL particles, it is particularly harmful because unlike LDL particles, which have to undergo oxidation before they can be taken into the arterial intima by macrophage cells, RLP can be readily scavenged by macrophage cells even when they are not oxidized. Once scavenged by a macrophage, RLP is transformed into foam cells which are the building blocks of arterial plaque. In fact, elevated RLP has been found in survivors of myocardial infarction and persons with significant coronary atherosclerosis.

Additionally, RLP contributes to endothelial dysfunction by impairing the vascular relaxation process as well as enhancing platelet aggregation.

## How is high RLP treated?

Although heredity plays a large role in the levels of RLP, consumption of omega-3 fatty acids can significantly lower levels of RLP. Therapies that normally lower triglycerides are also effective at lowering RLP.

## References

Handbook of Lipoprotein Testing, 2<sup>nd</sup> Edition, American Association for Clinical Chemistry, Inc. Press, Washington DC, 2000.

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Additional references at <http://www.spectracell.com/online-library-lpp-rlp-abstract>



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