COMPARISON OF TWO IMMUNOASSAYS FOR QUANTITATIVE MEASUREMENT OF OXYDIZED LDL

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Background

Hypercholesterolemia is a major risk factor for atherosclerosis and lowering cholesterol levels can significantly reduce risk for cardiovascular diseases. Recently, LDL oxidation has been recognized as playing an important role in the initiation and progression of atherosclerosis. Oxidized LDL (oLDL), but not native LDL, promotes vascular dysfunction by exerting direct cytotoxicity towards endothelial cells, by increasing chemotactic properties for monocytes, by transforming macrophages to foam cells via scavenger-receptors and by enhancing the proliferation of various cell types; e.g., endothelial cells, monocytes and smooth muscle cells. All of these events contribute to atherogenesis. OLDL determination may be of interest for early assessment of risk for atherosclerosis. The present study aimed at comparing two Enzyme-Linked ImmunoSorbent Assays (ELISA) newly developed by Biomedica® and Immundiagnostik® for quantitative determination of oLDL in human plasma and serum.

Materials and methods

We compared the analytical performances (precision, detection limit and linearity) of the two kits. Within-run precision was determined by measuring samples with low (n = 10), medium (n = 20) and high (n = 10) oLDL concentrations and between-run precision by serial measurements of the same samples over a 13-day period. The detection limit was determined by repeated (n = 20) determinations of the zero standard, the linearity by measuring successive dilutions (n = 13) of samples with a oLDL concentration of 1189 ng/ml (Immundiagnostik®) and 1309 ng/ml (Biomedica® distribued by Diasorin®). The correlation between the two techniques was analyzed using samples covering the whole range of oLDL concentrations (n = 20).

Results

Mean intra-assay CVs were 2.68 and 5.52% for the Biomedica and Immundiagnostiks techniques. Mean inter-assay CVs were 7.07 and 8.18%, respectively. OLDL detection limits were 94 ng/ml (Biomedica®) and 106 ng/ml (Immundiagnostik®) (Table 1). The Biomedica® technique demonstrated a better linearity (R^2= 0.995) than the Immundiagnostik® method (R^2 = 0.987 (Fig.1)). The results given by the two techniques were however in close correlation (R^2= 0.967) (Fig.2).

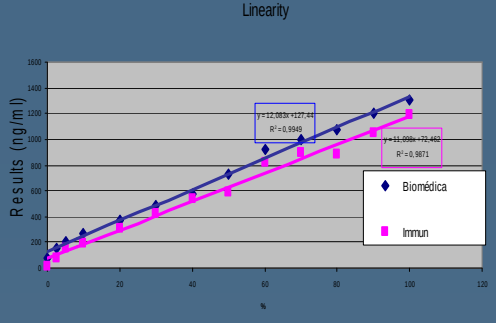

Fig.1

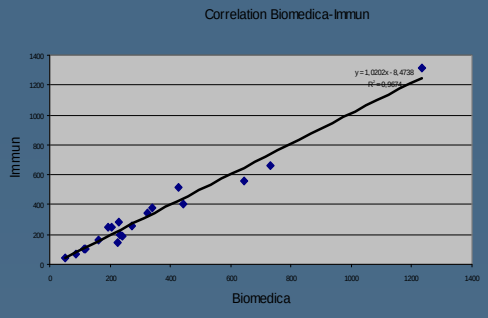

Fig.2

	n (Biomedica)	Biomedica	n (Immundiagnostik)	ImmundiagnostiK
CV intra-assay	12	2,68%	12	5,52%
CV inter-assay	13	7,07%	12	8,18%
Detection limit	20	94 ng/ml	20	106 ng/ml

Table 1

Conclusion

The new immunoassays from Biomedica® distribued by Diasorin® and Immundiagnostik® yielded plasma oLDL results in good correlation. From an analytical point of view, and in the limits of this study, the Biomedica® technique seems a valuable tool to perform oLDL determinations in patients at risk for cardiovascular disease.