

BIOCORE STUDY (“BIOMARKERS OF CORONARY EVENTS”): FROM SAMPLING TO DISCOVERY OF PLASMA BIOMARKERS BY SELDI-TOF MS AND 2DE

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In spite of important therapeutic advances during the last 20 years, coronary atherothrombotic complications are and will remain the first cause of death all over the world. Acute coronary syndromes (ACS) are most of the time unpredictable and can lead to sudden death before any medical treatment. The development of new strategies for the screening of patients susceptible to develop an ACS is thus of major interest.

We hypothesize that coronary artery disease, in its stable and unstable forms, is associated with modifications of the concentrations of various circulating proteins (circulating proteome), which could be assessed using a new method for pre-treatment of plasma before differential proteomic analysis.

Every step from the blood sampling to the proteomic analysis was strictly normalized (nature of the tubes used, centrifugation time and speed, conditions of storage etc.)

Three groups of 30 patients have been recruited in this study: non-ST elevation myocardial infarction (group 1), stable angina (group 2), angiographically normal coronary arteries without extra-coronary atherosclerosis (group 3). Five milliliters of plasma from each patient have been equalized; this methodology is based on a solid-phase ligand library of hexapeptides which enables a potential ligand for every protein in the biological sample, with a limited capacity of binding for abundant proteins, thus allowing enrichment in low abundance proteins/peptides (Proteominer™, Biorad). Various strategies of elution have been used in order to increase the number of peaks/spots detected respectively by SELDI-TOF mass spectrometry and by 2D-electrophoresis. Several differential peaks are currently being identified.

The new biomarkers discovered by proteomics will require further validation, using more straightforward assays (eg, ELISA), in case-control cohorts and in prospective cohorts which will assess their screening, prognostic and therapeutic values in coronary artery disease.