Antibodies for quantification of lipoprotein (a) in plasma as cardiovascular disease risk factor

CSIC and CIBER have developed monoclonal antibodies able to determine risk of cardiovascular disease based on the quantification of lipoprotein (a), taking into consideration the variability on its kringle IV type 2 domain (KIV-2) repeats.

Industrial partners are being sought to collaborate in the development of an immunoassay through a patent licence agreement.

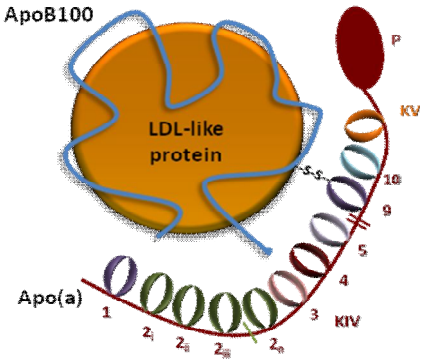
An offer for Patent Licensing and/or R+D collaboration

Apo(a) KIV-2 repeats are inversely proportional to cardiovascular risk

Plasma lipoprotein (a) (Lp(a)) has been identified as an important risk factor of cardiovascular disease. The singularity of this risk factor is due to a genetic predisposition to suffer cardiovascular diseases. It has been determined that individuals with high levels of Lp(a) increase atherogenesis and coronary artery disease risk.

Current determination of Lp(a) levels with diagnostic purposes are limited due to the heterogeneity of Lp(a) sizes making it difficult to standardize assays. This heterogeneity is due to the presence of different number of repeats in the kringle IV type 2 (KIV-2) protein domain present on the apolipoprotein(a) (apo(a)) part of the Lp(a) (from 3 to 40), causing over or underestimation of Lp(a) levels.

Here is presented a series of antibodies designed to detect selectively different apo(a) kringle IV domains (types 1 and 2) present at Lp(a). Such antibodies shall allow to develop an accurate immunochemical approach to diagnose risk of cardiovascular disease based on the quantification of the number of KIV-2 repeats and the precise concentration of Lp(a) levels independently of the number of KIV-2 repeats contained.



Lipoprotein(a) structure. *Apo(a) isoform size, based on number of kringle IV type 2 units, is crucial for determination of plasma Lp(a) levels.*

Main advantages and applications

- Current assays, expressing total Lp(a) mass, do not take into account mass differences between apo(a) isoforms, and consequently of Lp(a). The designed monoclonal antibodies presented are not sensitive to the number of repeats present in KIV-2 allowing an improved determination of Lp(a) plasma levels.
- Capacity to develop an specific immunoassay with an accurate response independent of the heterogeneity of Lp(a) size.
- Feasible development on different immunochemical analytical configurations, including microplate ELISA, test-strip, immunosensors, etc.
- Improved in situ application. Special facilities are not required.

Patent Status

Spanish patent application filed

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