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Clinical use of glycated albumin as a non-traditional measure of glycemic status

Background: Glycated Albumin (GA) has been suggested as an additional or alternative biomarker that can circumvent some of the limitation of HbA1c. The much shorter half-lives of albumin compared to hemoglobin makes it more responsive to changes in glycemic status. Moreover, GA shows a stronger correlation with continuous glucose measurement over one to two days than HbA1c, so it may reflect glycemic variability and glucose excursions more accurately. Although GA represents a promising biomarker for the evaluation of glycemic status in both experimental and clinical settings, its introduction in clinical practice requires further validation in relation to basic interpretative criteria and diagnostic accuracy.

Objectives: The objectives are to define reference limit of GA with a direct approach and to evaluate diagnostic accuracy of GA in predicting diabetes in asymptomatic subjects at risk of suffering from diabetes.

Methods: One thousand thirty-four consecutive blood donors were recruited for reference range definition. Asymptomatic subjects at risk for diabetes were recruited for diagnostic accuracy study. GA was measured by an enzymatic-colorimetric method.

Results: The calculated GA URL in blood donors was 14.5% (95% CI: 14.3–14.7). Among subjects at risk of diabetes, GA median levels were 13.2% (IQR: 12.2–14.4). Eighteen subjects (5.4%) were classified as diabetics based on their HbA1c. GA was significantly correlated with HbA1c ($r=0.31$; $P<0.0001$). According to ROC curve analysis, GA identified subjects with diabetes with a sensitivity of 72.2% (95% CI: 46.5–90.3) and a specificity of 71.8% (95% CI: 66.5–76.7) (AUC: 0.80; 95% CI: 0.75–0.84; $P<0.0001$) at the cut-off of 14%.

Conclusion: The knowledge of GA distribution in Healthy subjects is essential to promote its introduction in both research and clinical practice. GA can also be considered a useful biomarker of glycemic status that can predict diabetes with high accuracy.

Biography

Marcello Ciaccio is full Professor of Clinical Biochemistry and Clinical Molecular Biology at the University of Palermo. Currently, he is the Director of the Unit of Laboratory Medicine at the University Hospital of Palermo. His experimental work has been focused on the clinical validation of new biomarkers in several conditions, including diabetes, neurodegeneration, endocrinopathies.