

Dicarbonyl Methylglyoxal Induces Structural Perturbations, Aggregation and Immunogenicity in IgG with Implications in Auto-Immune Response in Diabetes

Authors : Sidra Islam, Moin Uddin, Mir A. Rouf

Abstract : A wide variety of pathological disorders owing to hyperglycemic conditions involves structural rearrangements and condensations of proteins. The implication of methylglyoxal (MG) modified immunoglobulin G (IgG) in the onset and progression of diabetes type 2 (T2DM) is studied in the present study. Using biophysical and biochemical approaches MG was found to perturb the structure of IgG, effect its microenvironment and leads to aggregate formation. Furthermore, MG-IgG was found to be highly immunogenic inducing high titre antibodies in female rabbits. Clinical studies revealed the presence of circulating anti-MG-IgG antibodies as analyzed by direct binding ELISA. The circulating auto antibodies were highly specific for MG-IgG as revealed by inhibition ELISA. Thus it can be concluded that MG is a powerful agent with a high damaging potential. To IgG. It is highly capable of generating immune response that contributes to the immunopathology associated with diabetes. Dicarbonyl adducts may emerge as potential biomarkers for T2DM.

Keywords : immunogenicity, Immunoglobulin G, methylglyoxal, Type 2 Diabetes Mellitus

Conference Title : ICACI 2017 : International Conference on Advances in Cellular Immunology

Conference Location : London, United Kingdom

Conference Dates : January 19-20, 2017