Development of an ELISA using polypeptide fragments of hemoglobin-acrylamide adducts for biological monitoring of acrylamide exposure

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Acrylamide (AA), a probable human carcinogen and genotoxicant, is widely used in industry and agriculture. Acrylamide and its metabolite, glycidamide (GA), are known to form hemoglobin (Hb-AA) adducts that can be used as a biomarkers of exposure. Presently, a modified Edman Degradation followed by GC/MS (ED-GC/MS) analysis is used to measure Hb-AAs. Screening large populations for AA exposure with ED-GC/MS is time consuming, labor intensive and expensive. We are developing an Enzyme Linked Immunosorbant Assay (ELISA) technique to evaluate Hb-AA with a minimum sample preparation and analysis time. Both AA and GA bind to Hb at the N-terminal valine (N-Term-Val) residue. We synthesized AA- and GA-modified-N-Term-Val decapeptides, homologous with both the alpha and beta chain of Hb. Polyclonal anti-AA- and GA-modified-N-Term-Val decapeptide antibodies are then used in the development of a high throughput competetive direct ELISA to evaluate AA exposure in humans.

General Posters
1:00 PM-3:00 PM, Monday, September 8, 2003 Javits Convention Center -- Hall 1B/1C, Poster

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