Disease diagnosis by lectin-carbohydrate interaction

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Abstract

Liver cirrhosis with hepatitis C viral infection (HCV-LC) causes high risk to develop hepatocellular carcinoma (HCC). We investigated the changes in the expression level of serum proteins and their glycosylation pattern among chronic hepatitis C (HCV-CH), HCV-LC and HCC patients with respect to controls. 2D gel electrophoresis of HCV-CH, HCV-LC and HCC patient's sera followed by LC-MS two highly expressed glycoproteins viz., Haptoglobin (HP) and alpha-1-antitypsin (AAT) were identified. This was further confirmed by western blot and ELISA. The change in glycosylation pattern of these serum proteins were assayed using different lectins.

Asialohaptoglobin has been tested as a new analyte for diagnosis of liver cirrhosis. Herein a novel plasmonic ELISA with gold nanoparticle employing *Sambucus nigra* agglutinin (SNA) has been developed to detect the extent of α-2,6 sialylation of serum haptoglobin, in normal subject and liver cirrhosis patients. This is a fast, cheap, point-of-care and high throughput visual assay platform for the specific identification and determination of asialo-HP to monitor the cases of liver cirrhosis.

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