Serum proteome analysis - a tool to identify protein markers for chronic pancreatitis

Vijayashankar S[1], Arumugam Geetha A[1], Rajagopal Surendran R[2]

[1]Department of Biochemistry, Bharathi Women's College, Chennai, India.

[2]Department of Surgical Astroenterology and Proctology, Stanley Medical College and Hospital, Chennai, India.

From International Conference on Biosciences- Trends in Molecular Medicine.

Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

American J of Bio-pharm Biochem and Life Sci 2012 March, Vol. 1 (Suppl 1): A52.

ABSTRACT

Serum proteome analysis can reveal differentially expressed protein(s) in pathological conditions. Chronic Pancreatitis (CP) characterized by severe inflammation of pancreas, lacks specific clinical markers except serum amylase and lipase. The present study is focused on evaluating new protein markers for CP by proteome analysis. CP patients registered in the Department of Surgical Gastroenterology and Proctology, Stanley Medical College and Hospital with the age group of 20-50 were selected for the study before starting any therapeutic measure.The pooled serum was used for Proteome Analysis consisting 2D-Electrophoresis, Identification of differentially expressed proteins, Isolation and Tryptic digestion of proteins of interest, Separation of digested peptides by Liquid Chromatography and Identification of peptides by Mass Finger Printing Technique. The peptides were confirmed by protein search engine programme. The identified proteins were confirmed by quantitative analysis in individual serum samples. Among the 45-48 differentially expressed proteins, haptoglobin 2 (Hp 2) and fibronectin portion of collagen VII were found to be significantly elevated in CP. The Hp 2 isoform was confirmed by specific benzidine H2O2 stain. Other inflammatory markers CRP, C3a and α2 macroglobulin were quantified and a significant elevation was seen only in haptoglobin level. Collagen VII is formed during tissue injury to act as anchorage protein that can hold the tissue architecture intact. This change might be due to an imbalance in the enzyme proteins involved in the turnover of collagen VII such as matrix metalloproteinase- 9(MMP 9) and tissue inhibitor of metalloproteinase- 1(TIMP 1). Haptoglobin- 2 and fibronectin portion of collagen VII can be used as new protein markers for chronic pancreatitis.

Published: 1 March 2012.