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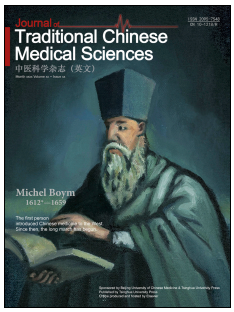

Proteomics analysis of liver proteins from rats with spleen-deficiency syndrome induced by chronic improper diet consumption and fatigue

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Proteomics analysis of liver proteins from rats with spleen-deficiency syndrome induced by chronic improper diet consumption and fatigue

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Running title: Liver proteomics from rats with spleen-deficiency syndrome

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Abstract *Objective:* To investigate a proteomics analysis of liver proteins from rats with spleen-deficiency syndrome (SDS) induced by chronic improper diet consumption and fatigue.

Methods: This study used a liver proteomic profiling method to identify differentially expressed proteins and altered pathways involved in SDS rats. Specifically, we collected liver samples from a control group and a group with SDS induced by chronic improper diet consumption and fatigue for 4 weeks. The pooled liver proteins in each group were labeled with 8-plex isobaric tags for relative and absolute quantitation reagents. The labelled control and SDS group samples were pooled together and separated by high-pH reverse-phase liquid chromatography. The differentially expressed proteins from the liver proteomes were analyzed to identify potential biomarkers of SDS. Differentially expressed proteins were selected in conjunction with gene ontology and ingenuity pathway analysis.

Results: We identified 2176 protein clusters with more than two peptides in the SDS group, with 141 proteins quantified as differentially expressed proteins. Of these, 75 proteins were up-regulated, and 66 were down-regulated. Three activated signaling pathways, the thrombin, CXCR4 and synaptic long term depression signaling pathways, and a large multi-protein complex within the network were revealed in the liver proteomic analysis of SDS rats.

Conclusions: This is the first report of a differential liver proteome under SDS conditions. The results suggest that the liver proteome partially reflects the pathological changes involved in SDS. The findings provide important information for comprehensively understanding the mechanisms of dysfunction or injury in the liver at the molecular level as a result of SDS. Furthermore, they provide a novel understanding of the connotation of SDS in the field of traditional Chinese Medicine.

KEYWORDS

Spleen-deficiency syndrome;

Proteomics analysis;