doi:10.4172/2153-0602.10000S1

BIOTECHNOLOGY-2011

OMICS Group Conferences
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World Congress on
Biotechnology

Proteome analysis of hepatocellular carcinoma in diethylnitosamine induced rats by 2-dimensional Gel electrophoresis

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Hepatocellular carcinoma is one of the most frequent causes of cancer related death worldwide. The prevalence is more common in south East Asia and sub-Sahara African countries. However, the incidence is increasing in developed countries as well. Major risk factors associated with HCC are liver cirrhosis, hepatitis B virus, hepatitis C virus, aflotoxin B exposure, alcohol drinking or genetic defect etc. In present study, we employed Diethylnitrosamine to induce hepatocellular carcinoma in rats for the proteome analysis. The physiology and the mechanism of DEN induced lesions is similar in humans and rodents. Tumor was induced in male wistar rats by oral administration of diethylnitrosamine (40ppm/day) for 8 weeks and rats were fed *ad libitum* till they were sacrificed. At the end of 16weeks, rats developed well defined liver tumors as confirmed by histopathology. Total cell protein was extracted and differential protein expression pattern was analyzed by 2- Dimensional Gel Electrophoresis between normal and DEN treated liver tumor samples. Several protein spots were observed which were differentially expressed. A majority of the proteins were found to be up-regulated during tumorogenesis. This model stimulates the differential analysis of proteome during hepatocellular carcinoma and may be useful for further understanding the mechanism of tumorogenesis. The Biomarkers of HCC can be discovered which helps in early diagnosis of the liver cancer. Therefore, the outcome of the work will also open up new avenues for the development of novel gene-selective cancer therapeutics.