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Effect of mesenchymal stem cells and a curcumin derivative on notch1 signaling in hepatocellular carcinoma in rats

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The Notch1 receptor and signaling pathway is upregulated in HCC. The present study was conducted to evaluate the effect of mesenchymal stem cells (MSCs) and a novel curcumin derivative (NCD) on hepatocellular carcinoma (HCC) in hepatoma induced rats, and to investigate their effect on Notch1 signaling pathway target genes. One hundred rats were divided equally into: control group, control group received MSCs, control group received a NCD, HCC group, HCC group received MSCs only, HCC group received a NCD only, HCC group received MSCs and a NCD simultaneously, HCC group received MSCs followed by a NCD 2 weeks later, HCC group received MSCs pretreated with a NCD and HCC group received MSCs conditioned medium (CM). Histopathological examination, gene expression of Notch1 signaling target genes by RT-PCR in rat liver tissue were assessed and serum levels of alpha fetoprotein, ALT and albumin were assesed in all groups. Administration of MSCs or a NCD after induction of HCC improved the histopathological picture while administration of MSCs and a NCD or MSCs pretreated with a NCD showed restoration of liver parenchyma. Notch1 and its target genes were downregulated in all treated groups. Liver function was ameliorated in all treated groups. These data suggest that modulation of Notch1 signaling pathway by MSCs and/or NCD may be considered as a therapeutic target in HCC.

Biography

Walaa Ibrahim Ali Ahmed has completed her PhD at the age of 31 years from Faculty of Medicine, Cairo University. She is a Lecturer of Medical Biochemistry and Molecular Biology at Faculty of Medicine, Cairo University and is one of the active members of the unit of biochemistry and molecular biology (UBMB) at Kasr Alainy School of Medicine for 6 years. She has published one paper in reputed journal.

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