THE USE OF POLYMER NANOPARTICLES CONJUGATED WITH LNCRNA (MT1DP) AS A POTENTIAL THERAPEUTIC TOOL FOR HCC IN A MURINE MODEL

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Abstract - Hepatocellular carcinoma (HCC) is one of the utmost deadly human malignancies. Emerging evidences have recently suggested that long noncoding RNAs (lncRNAs) can be used as a therapeutic tool during HCC tumorigenesis due to their tumor-suppressive effects. So, this study was designed to assess the use of lncRNA (MT1DP) alone and in conjugation with polymer nanoparticles as an innovative therapeutic tool for HCC in a murine model. One-hundred mice were included in this study and were categorized into five main groups (20 mice/group) including: the 1st act as Normal control group injected with saline only; the 2nd act as pathological control group injected with diethylnitrosamine (DEN) once/week for 16 weeks; the 3rd, 4th and 5th groups were injected intrahepatic 4 times weekly starting from the 12th week after initiating DEN injection with polymer nanoparticles, MT1DP and polymer conjugated MT1DP, respectively. At 16 weeks, the mice were sacrificed and blood samples and liver specimens were collected for biochemical and histopathological assessment. The results showed that AFP, VEGF, and TNF-α decreased significantly, in the 4th and 5th groups, in comparison to the pathological control group and the 3rd group. It was also observed that there was an improvement in histopathology in both the 4th and 5th groups when compared to the pathological control group and the 3rd group. In conclusion, the administration of lncRNA (MT1DP) alone or in conjugation with polymer nanoparticles can be used as novel therapeutic agents for HCC.

Keywords - Diethylnitrosamine; hepatocellular carcinoma; polymer nanoparticles; MT1DP.

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