

Letter to the Editor

Comment on “The effect and mechanism of metallothionein MT1M on hepatocellular carcinoma cell”

Dear Editor,

Metallothionein (MT) is a type of low molecular weight metal-binding protein involved in breast and thyroid tumor occurrence and development process. In their study, Zhang et al¹ evaluated MT1M, an important member of MT family. HepG2 cells were cultured and randomly divided into two groups, including control and MT1M group that were transfected with MT1M plasmid. MT1M plasmid transfection significantly elevated MT1M-mRNA expression that markedly induced HepG2 apoptosis through enhancing Caspase 3 activity. Furthermore, in MT1M transfection group, the level of Bcl-2 protein declined, but the level of Bax protein was up-regulated. This imbalance leads to abnormal cells behaviour.

Authors agree that MT1M is involved in regulating liver cancer, as demonstrated in other papers.

Also, Fu et al² studied MT1M down-regulation in hepatocellular carcinoma (HCC). MT1M suppressed HCC carcinogenesis possibly by inducing cell cycle arrest, enhancing apoptosis and inhibiting cell migration and invasion.

In 2015, Ding et al³ hypothesized that MT1M may be implicated in the HCC recurrence and metastasis, correlating with adverse clinical outcome. In their study, MT1M appeared to be down-regulated.

We remember that HCC is still the most common primary liver cancer⁴. It often results from cirrhosis caused by chronic viral hepatitis C and B, alcoholic hepatitis, autoimmune hepatitis, hemochromatosis. The incidence of HCC increases both in patients with HIV infection^{5,6} and in non-alcoholic fatty liver disease (NAFLD)^{7,8}.

The development of new prognostic factors, tumor markers, and imaging techniques is the consequence of the understanding the basic principles of the biology HCC. More studies⁹⁻¹¹ were carried on angiogenesis and new target therapies.

Also, the possible origin of some neuroendocrine components in HCC is still unclear but Biondi et al¹² reported elevated serum chromogranin A (CgA) in 72/96 patients with HCC compared with controls. These values were significantly correlated with α -fetoprotein (AFP) and HCC stage, based on the Barcelona Clinic Liver Cancer (BCLC) staging classification¹³.

These findings provide evidence that MT1M might be a tumor suppressor and potential marker for HCC gene therapy and early diagnosis.

Table I. The effect and mechanism of metallothionein MT1M on hepatocellular carcinoma cell.

Paper	MTM1 Mechanism	Supposed effects
Zhang et al ¹	Bcl-2 down regulation; Bax up regulation; Caspase-3 activity improvement.	Induction of liver cancer
Fu et al ²	Cell cycle arrest induction; Apoptosis induction; Cell migration and invasion inhibition	Induction of liver cancer
Ding et al ³	MTM1 down regulation	Facilitation of recurrence and metastasis

Conflict of interest

The authors declare no conflicts of interest.

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