

The Influence and Mechanism of Methandienone Abuse on Liver Function

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Abstract

Objective To explore the effects and mechanism of Metandienone (MA) abuse on hepatocytes and liver function. **Methods** The final concentration of 1 $\mu\text{g/ml}$ MA was co-incubated with human hepatocyte Hep G2 for 24 hours, and the cell viability of each group was detected by the CCK8 method. The apoptosis of cells in each group was detected by TUNEL assay; The morphological changes of cells and mitochondria were observed by transmission electron microscopy (TEM). The genetic changes after MA treatment of Hep G2 were analyzed by bioinformatics such as transcriptome sequencing; The mRNA expression levels that changed during MA treatment were detected by real-time fluorescence quantitative PCR (RT-qPCR). Meanwhile, the mice were randomly divided into the normal control group and the MA group, with 5 mice in each group. MA ($0.1 \text{ mg g}^{-1} \text{ d}^{-1}$) was intragastrally administered once a day for 7 consecutive days. Liver and blood were collected. The activities of alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), albumin (ALB), total cholesterol (CHO), triglyceride (TG), lactate dehydrogenase (LDH), creatine kinase (CK) and other parameters in the serum of mice were detected by the kit microplate method. The pathological changes of mouse liver tissues were observed by HE staining, PAS staining and TEM. **Results** Compared with the cells in the control group, the Hep G2 cells treated with MA proliferated slowly, had an increased apoptosis rate and cell necrosis. The liver function inflammatory indices such as blood routine in the serum of mice in the MA group were significantly increased; Obvious steatosis, hepatocyte necrosis and inflammatory cell infiltration occurred in the hepatocytes of mice in the MA group. The results of RT-qPCR detection showed that the mRNA expressions of IL4R, IL11, IL10 and IL20RB increased. **Conclusion** The abuse of anabolic hormones such as MA can lead to liver function damage, and the mechanism may be related to the secretion of inflammatory factors.

Keywords

Metandienone, Abuse, Liver Function, Mechanism