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Effect of different dietary patterns on hepatic inflammatory cytokines in NAFLD rats

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Aim: Aim of this study is to test the changes of inflammatory factors IL-1 β , IL-18, NLRP3, caspase-1 of serum and liver of NAFLD rats, in order to investigate the influence of dietary factors on the pathogenesis of NAFLD.

Method: 12 normal rats as the control group and 48 NAFLD model rats which were fed with high-fat diet for eight weeks and were successful model according to serum biochemical indexes and liver pathology results were divided into four groups randomly, namely: high-fat diet group, high-protein diet group, high-carbohydrate diet group and normal diet group. These rats were randomly selected to be killed after feeding for four and eight weeks. The expression level of serum IL-1 β , IL-18 was tested by ELISA. The level of IL-1 β , IL-18, NLRP3, and caspase-1 mRNA of liver was assayed by qRT-PCR. The method of western blot was used to detect the protein level of NLRP3 and caspase-1 of liver.

Results: Compared with concurrent control group and normal diet group, the expression level of serum IL-1 β , IL-18 and the transcriptional level of liver IL-1 β , IL-18, NLRP3, caspase-1 mRNA in high-fat diet group, high-protein diet group and high-carbohydrate diet group were increased, and the differences were statistically significant ($P < 0.05$). Compared with concurrent control group, the transcriptional level of IL-1 β , IL-18 and NLRP3 mRNA in normal diet group were increased, while the level of caspase-1 mRNA was decreased. The differences were statistically significant ($P < 0.05$). Compared with control group and normal diet group, the expression of protein of NLRP3 and caspase-1 were increased in high-fat diet group, high-protein diet group and high-carbohydrate diet group. It tended to be upward obviously, the difference was statistically significant ($P < 0.05$). The expression of protein of NLRP3 in normal diet group was higher than that in control group and the difference was statistically significant ($P < 0.05$).

Conclusions: The level of serum inflammatory cytokines IL-18, IL-1 β and the transcriptional level of IL-1 β , IL-18, NLRP3, caspase-1 mRNA and the expression of protein of NLRP3, caspase-1 in high-fat diet group, high-protein diet group and high-carbohydrate diet group were increased. It presented that IL-1 β , IL-18, NLRP3, caspase-1 were participated in chronic inflammation in the course of the development of NAFLD. Irrational structure of dietary can aggravate the development of NAFLD, and high-fat, high-protein and high-carbohydrate diet are the risk factors of NAFLD.

Biography

Jiang Jian-Hua has completed her graduation from Anhui Medical University. She is currently Director of Clinical Nutrition at First Affiliated Hospital of Anhui Medical University and famous Clinical Nutrition Specialist. She presided over a number of research projects and published dozens of papers.

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