[1]邱烈旺,顾陆昀,吕琳,等.水甘油通道蛋白在非酒精性脂肪变性肝细胞模型中的表达及意义[J].第三军医大学学报,2012,34(07):622-626.

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水甘油通道蛋白在非酒精性脂肪变性肝细胞模型中的表达及意义(PDF)

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Title: Expression of aquaglyceroporins in nonalcoholic hepatocyte steatosis and its significance

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关键词: 水甘油通道蛋白; 非酒精性脂肪肝; 水通道蛋白3; 水通道蛋白7; 水通道蛋白9

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摘要: 目的 研究水甘油通道蛋白（aquaglyceroporins）AQP3、AQP7、AQP9基因在油酸钠诱导的脂肪变性肝细胞模型中的表达变化及其意义。 方法 以常规培养的人肝癌HepG2细胞为对照，采用油酸钠诱导HepG2细胞脂肪变性，建立非酒精性脂肪变性肝细胞模型，利用油红O染色及细胞内甘油三酯含量测定检测肝细胞脂肪变性程度，并分别于0、12、24、48 h采用实时荧光定量PCR与Western blot方法检测水甘油通道蛋白AQP3、AQP7、AQP9基因的表达。 结果 油红O染色观察及肝细胞内甘油三酯含量测定显示HepG2细胞在油酸钠处理12 h后即开始出现脂肪变性，随着刺激时间延长，脂肪变性程度逐渐加重，肝细胞内甘油三酯含量在48 h组（79.76±0.75）较0 h组明显升高（*P*<0.05）。模型组中，AQP3 mRNA水平12 h时表达开始减低，48 h时（0.39±0.08）表达最低，与对照组相比差异具有统计学意义（*P*<0.05）； AQP7 mRNA表达与对照组相比略有升高，差异无统计学意义（*P*>0.05）；而AQP9 mRNA 表达水平自12 h（1.59±0.11）即开始增加，与对照组相比差异具有统计学意义（*P*<0.05）。模型组中，AQP3蛋白水平12 h时表达开始减低，24、48 h组[（0.016±0.002），（0.012±0.001）]与对照组相比差异具有统计学意义（*P*<0.05）； AQP7 蛋白表达与对照组相比较差异无统计学意义（*P*>0.05）；AQP9蛋白水平12 h表达开始增高，24、48 h[（0.050±0.002）、（0.079±0.002）]组与对照组相比差异具有统计学意义（*P*<0.05）。 结论 肝细胞脂肪变性模型中水甘油通道蛋白AQP3表达下调、AQP9表达上调、AQP7表达无明显差异，提示不同亚型的水甘油通道蛋白可能通过不同的机制参与了肝细胞非酒精性脂肪变性。

Abstract: Objective To study the expression of aquaglyceroporin genes (AQP3,AQP7 and AQP9) in a sodium oleate-induced hepatocyte steatosis model and its significance. Methods Routinely cultured human HepG2 cells were used as controls, and steatosis of HepG2 cells was induced with sodium oleate to establish a nonalcoholic hepatocyte steatosis model. Hepatocyte steatosis and triglyceride level in hepatocytes were measured with oil red O staining. Expression of AQP3, AQP7 and AQP9 was detected by RT-PCR and Western blotting respectively at 0, 12, 24 and 48 h. Results Oil red O staining showed that hepatocyte steatosis occurred 12 h after HepG2 cells were treated with sodium oleate and aggravated with the stimulating time. The triglyceride level in hepatocytes was significantly higher at 48 h (79.76±0.75) than at 0 h (*P*<0.05). The expression level of AQP3 mRNA was lower at 12 and 48 h (0.39±0.08) in model group than in control group (*P*<0.05). The expression level of AQP7 mRNA was slightly higher in model group than in control group (*P*>0.05). The expression level of AQP9 mRNA was higher at 12 h in model group (1.59±0.11) than in control group (*P*<0.05). The expression level of AQP3 protein was lower at 12, 24 (0.016±0.002) and 48 h (0.012±0.001) in model group than in control group (*P*<0.05). No significant difference was found in expression of AQP7 protein between model group and control group (*P*>0.05). The expression level of AQP9 protein was higher at 12, 24 (0.050±0.002) and 48 h (0.079±0.002) than in control group (*P*<0.05). Conclusion The expression of AQP3 is down-regulated while that of AQP9 is up-regulated in hepatocyte steatosis model, indicating that different types of aquaglyceroporins may be involved in hepatocyte steatosis *via* different mechanisms.

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