

论著

IGF-I和hCG对大鼠Leydig细胞葡萄糖转运蛋白基因表达调控研究

陈 粤; LIN T; NAGPAL ML

汕头大学理学院生物学系, 广东 汕头 515063

收稿日期 2004-12-20 修回日期 2005-3-25 网络版发布日期:

摘要 背景与目的: 研究胰岛素样生长因子-I(Insulin-like growth factor-I, IGF-I)和人绒毛膜促性腺激素(human Chorionic Gonadotropin, hCG)对成年大鼠Leydig细胞中葡萄糖转运蛋白(Glucose transporters, GLUTs)基因表达的影响, 为进一步探讨Leydig细胞中睾酮的合成与葡萄糖代谢关系提供依据。材料与方法: 采用改良的Klinefelter方法从成年大鼠睾丸中分离获得Leydig细胞, 并用反转录-聚合酶链技术检测 IGF-I和hCG对Leydig细胞中GLUTs基因表达的调控作用。结果: 分离得到纯度为98%的Leydig细胞, 与空白对照组相比, hCG可显著增加Leydig细胞中GLUT8基因mRNA的表达, 并且此作用具有剂量依赖性与时效性。100 ng/ml IGF-I可显著增加Leydig细胞中GLUT8基因mRNA表达, 并且IGF-I可和hCG协同作用, 显著提高GLUT8基因mRNA表达, 该结果与100 ng/ml IGF-I和10 ng/ml hCG协同作用显著增加睾酮合成的结果相吻合。然而, 在大鼠Leydig细胞中, 无论是10 ng/ml hCG或100 ng/ml IGF-I单独作用或同时作用于细胞, 都不影响GLUT1和 GLUT3基因mRNA水平。结论: 在成年大鼠 Leydig细胞中, IGF-I和hCG对细胞中GLUT8基因表达的调节作用具有特异性, IGF-I和hCG能协同作用显著提高细胞GLUT8基因mRNA水平, 从而增强细胞摄取葡萄糖的能力, 可为细胞提供更多的代谢能源, 最终增加了Leydig细胞睾酮合成与分泌。

关键词 [大鼠Leydig细胞](#); [胰岛素样生长因子-I](#); [人绒毛膜促性腺激素](#); [葡萄糖转运蛋白](#); [调控](#)

Regulation of GLUT Gene Expression by IGF-1 and hCG in Adult Rat Leydig Cells

CHEN Yue; LIN T; NAGPAL ML

Department of Biology, College of Science, Shantou University, Shantou, 515063, China

Abstract **BACKGROUND AND OBJECTIVE:** To study the effects of insulin-like growth factor-I (IGF-I) and human chorionic gonadotropin (hCG) on expressions of glucose transporters (GLUTs) gene and testosterone production in adult rat Leydig cells and the relationship between steroidogenesis and glucose metabolism in adult rat Leydig cells. **MATERIAL AND METHODS:** The rat Leydig cells were isolated using modified Klinefelter's method. The regulatory effects of IGF-I and hCG on GLUTs gene expression in primary cultured rat Leydig cells were investigated by RT-PCR. **RESULTS:** The rat Leydig cells with the purity of 98% were isolated. hCG caused dose- and time-dependent increases of GLUT8 mRNA levels. IGF-I (100 ng/ml) could also increase GLUT8 mRNA expression significantly. IGF-I and hCG had synergistic effects on GLUT8 mRNA expression ($P < 0.001$). This result was consistent to the result from the experiment in which IGF-I (100 ng/ml) and hCG (10 ng/ml) can increase testosterone level synergistically ($P < 0.001$). However, in primary cultured rats Leydig cells, neither GLUT1 nor GLUT3 mRNA expression was affected by the treatment with hCG (10 ng/ml), IGF-I (100 ng/ml), or the combination of hCG (10 ng/ml) and IGF-I (100 ng/ml). **CONCLUSION:** In adult rat Leydig cells, regulatory effects of IGF-I and hCG on GLUT8 mRNA expression are specific. IGF-I and hCG can significantly increase GLUT8 mRNA expression level synergistically.

Keywords [rat Leydig cell](#) [insulin-like growth factor-I](#) [human chorionic gonadotropin](#) [glucose transporter](#) [regulation](#)

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [\[PDF全文\]\(732k\)](#)
- ▶ [\[HTML全文\]\(105k\)](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [Email Alert](#)

相关信息

- ▶ 本刊中 包含 “[大鼠Leydig细胞](#); [胰岛素样生长因子-I](#); [人绒毛膜促性腺激素](#); [葡萄糖转运蛋白](#); [调控](#)” 的 [相关文章](#)

▶ 本文作者相关文章

· [陈粤;LIN T;NAGPAL ML](#)

通讯作者 LIN T lin@gw.med.sc.edu