



## 细胞外信号激酶蛋白5在卵泡刺激素介导的卵泡颗粒细胞甾体激素生成中的作用

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## Role of Extracellular Signal-regulated Protein Kinase 5 in the Biosynthesis of Follicle-stimulating Hormone-stimulated Progesterone in Primary Granulosa Cells

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摘要

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**摘要** 目的 研究细胞外信号激酶蛋白5(ERK5)在卵巢颗粒细胞甾体激素生成中的作用。方法 采用Western blot检测在卵泡刺激素(FSH)刺激原代颗粒细胞甾体激素生成过程中ERK5的表达变化和激活情况, 荧光共聚焦技术分析ERK5的亚细胞定位, 腺病毒技术观察活化型ERK5和显性负性ERK5对颗粒细胞甾体激素生成的影响。结果 Western blot检测结果表明, FSH处理颗粒细胞后ERK5的表达随处理时间延长而下调, 而ERK5活性形式的表达随处理时间延长而逐渐上升。荧光共聚焦技术分析结果显示, FSH的处理并没有明显影响ERK5在颗粒细胞中的定位。腺病毒技术观察结果发现, 在细胞中联合感染活化型MEK5重组腺病毒和野生型ERK5重组腺病毒能促进FSH引起的细胞内StAR的表达升高和孕酮分泌, 而显性负性ERK5重组腺病毒感染细胞则出现相反的效应。结论 ERK5可能促进了FSH介导的颗粒细胞甾体激素生成。

**关键词:** 细胞外信号 激酶蛋白5 卵泡刺激素 颗粒细胞 甾体激素 孕酮

**Abstract:** Objective To study the role of extracellular signal-regulated protein kinase 5 (ERK5) during the biosynthesis of follicle-stimulating hormone (FSH)-mediated progesterone in primary granulosa cells. Methods The expressions of phosphorylated and general forms of ERK5 in primary granulosa cells after the treatment of FSH were detected by Western blot analysis. The subcellular localization of ERK5 was observed by confocal microscopy. The effect of ERK5 on FSH-mediated progesterone biosynthesis in primary granulosa cells was analyzed using recombinant adenovirus vectors. Results ERK5 activation was induced by FSH in a time-dependent manner in primary cultured granulosa cells, although the general ERK5 protein level decreased also in a time-dependent manner. The treatment of FSH showed no remarkable effect on the subcellular distribution of endogenous ERK5, which was mainly in the cytoplasm of granulosa cells. The co-infection of Ad-caMEK5 and Ad-wtERK5 increased the progesterone production and StAR expression in primary cultured granulosa cells, whereas inhibition of ERK5 activation suppressed the FSH-stimulated progesterone production. Conclusion ERK5 may stimulate FSH-mediated progesterone production in primary cultured granulosa cells.

**Keywords:** extracellular signal-regulated protein kinase 5 follicle-stimulating hormone granulosa cells steroid hormones progesterone

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