

论著

Smad4蛋白及mRNA在卵巢不同发育阶段的表达

苗竹林¹,王自能¹,章韵¹,程龙球²

暨南大学1第一附属医院妇产科, 2生物工程学系, 广东 广州 510632

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摘要 目的: 探讨Smad4在不同发育阶段大鼠卵巢中蛋白及mRNA的表达。方法: 选择不同发育时期大鼠卵巢, 运用免疫组化方法检测卵巢中Smad4蛋白表达, 并进行图像分析; 采用半定量逆转录聚合酶链反应(RT-PCR)方法检测Smad4 mRNA在卵巢中的表达。结果: 免疫组化结果显示Smad4主要表达在各级卵泡中, 在卵巢发育早期, Smad4主要在原始卵泡和窦前卵泡中表达; 随着卵巢的发育成熟, Smad4在窦状及成熟卵泡颗粒细胞和卵泡膜细胞的表达与间质细胞比较无显著差异 ($P>0.05$)。Smad4在卵泡中的表达强度也发生了变化: 随着卵泡的发育, Smad4在窦状及成熟卵泡卵母细胞的表达与窦前卵泡卵母细胞比较明显减弱 ($P<0.05$, $P<0.01$); 在卵泡膜细胞的表达逐渐增强 ($P<0.01$), 而在各级卵泡颗粒细胞中的表达无显著差异 ($P>0.05$)。RT-PCR结果显示各阶段卵巢均有mRNA的表达, 从第3周起Smad4 mRNA的表达明显增强, 与生后1 d比较差异显著 ($P<0.05$)。结论: 卵巢内存在Smad4, 提示TGF- β 家族对卵泡发育的调节很可能是通过Smad信号转导模式实现的。

关键词 [卵巢](#); [大鼠](#); [蛋白质Smad4](#); [免疫化学](#)

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Expression of Smad4 protein and mRNA in different developmental stages of the rat ovary

MIAO Zhu-lin¹, WANG Zi-neng¹, ZHANG Yun¹, CHENG Long-qiu²

1Department of Obstetrics & Gynecology, The First Affiliated Hospital, 2Department of Biotechnology, Jinan University, Guangzhou 510632, China

Abstract

AIM: To investigate the expression of protein and mRNA of Smad4 in different developmental stages of the rat ovary. METHODS: Rat ovaries of different developmental stages were collected. The expression of Smad4 protein was detected and evaluated by immunohistochemistry and image analysis system. Smad4 mRNA was measured by semi-quantitative RT-PCR. RESULTS: Smad4 protein was expressed mainly in follicles. In the early stage, Smad4 protein was expressed mainly in primordial and preantral follicles. No significant difference was found among the granulosa cells, theca cells and stromal cells of antral and mature follicle after sexual maturity ($P>0.05$). The staining intensity of Smad4 in follicles changed in relation with their development. Its expression in oocytes of antral and mature follicles was significantly decreased, as compared to that of preantral follicles ($P<0.05$, $P<0.01$). And it was markedly higher in the theca cells of antral and mature follicle than that of preantral follicles ($P<0.01$). No significantly difference was found in the granulosa cells of different developmental stages ($P>0.05$). The RT-PCR demonstrated that Smad4 mRNA was expressed in all developmental stages of the rat ovary, and from the 3rd week on, the expression of Smad4 mRNA was significant higher than that of the 1 day postnatal. CONCLUSION: The expression of protein and mRNA of Smad4 in the rat ovary indicate that TGF- β s may regulate the folliculogenesis by Smad signal transduction model.

Key words [Ovary](#) [Rats](#) [Protein Smad4](#) [Immunochemistry](#)

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