

论著

## Hsp60基因在 小鼠腭和肢正常与异常发生过程中的表达

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**摘要** 背景与目的: 研究热休克蛋白60基因(heat shock protein 60 gene, Hsp60)在小鼠胚胎腭、前肢正常和异常发育过程中的表达情况。材料与方法: 将受孕后ICR小鼠随机分为实验组和对照组2组, 每组各64只, 于孕10 d(gestational day 10, GD10), 分别经口一次给予实验组孕鼠80 mg/kg的全反式视黄酸, 对照组孕鼠给予等体积的大豆油, 并分别于GD11~GD18取2组胎鼠的前肢, 于GD15~GD17取2组胎鼠的腭, 利用实时荧光定量PCR检测Hsp60的表达丰度。结果: Hsp60在正常、异常肢和腭中均有表达。对照肢的表达丰度在GD14和出生前呈高表达, 而实验肢的表达在各胚龄无明显差异( $P>0.05$ ); 实验肢Hsp60在GD11~GD18的表达水平高于同一胚龄的对照肢( $P<0.05$ )。在正常腭中, Hsp60恒定表达, 在异常腭中, Hsp60的表达随胚龄增大而降低; 在GD15~GD17的表达丰度为实验腭低于同胚龄的对照腭( $P<0.05$ )。结论: 全反式视黄酸所致的短肢中, Hsp60的表达呈应激性升高; 而在异常腭中, Hsp60的表达受到抑制。

关键词 [Hsp60](#); [胚胎](#); [肢](#); [腭](#); [发育](#)

## Expression of Hsp60 in Normal and Abnormal Limb and Palate Development in Mice induced by Retinoic Acid during Embryogenesis

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**Abstract BACKGROUND & AIM:** To study the expression of heat shock protein 60 gene (Hsp60) in normal forelimbs and short forelimb malformations, normal palates and cleft palates during embryogenesis in mice. **MATERIALS AND METHODS:** At gestational day 10 (GD10), mice in the treatment group and the control group were given 80 mg/kg of all-trans retinoic acid and the same volume of soybean oil, respectively. The forelimbs of all embryos were harvested during GD11\_GD18, and the palates were obtained during GD15\_GD17. The expression levels of Hsp60 in all samples was measured by real-time quantity reverse transcript polymerase chain reaction (QRT-PCR). **RESULTS:** Hsp60 was expressed in all samples. In the normal forelimbs high expressions were found on GD14, GD17 and GD18, and same in the short forelimb malformations, with no difference among all the samples( $P>0.05$ ). The expression of Hsp60 in the abnormal limbs was stronger than that in the normal limbs during GD11\_GD18 ( $P<0.05$ ). The expression of Hsp60 in the normal palates was stable during GD15\_GD17. In the cleft palates, the expression of Hsp60 decreased with age during GD15\_GD17. The expression of Hsp60 in the normal palates was stronger than that of the cleft palates during GD15\_GD17 ( $P<0.05$ ). **CONCLUSION:** During embryogenesis in mice, the expression level of Hsp60 in all-trans retinoic acid-induced short limb malformations was increased by stress, but that in cleft palates was suppressed.

**Keywords** [heat shock protein 60 gene \(Hsp60\)](#) [embryo](#) [limb](#) [palate](#) [development](#)

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