



## 视黄酸对热带爪蟾胚胎致畸效应的表型特征

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### Teratogenic phenotypes induced in *Xenopus tropicalis* embryos by all-*trans* retinoic acid

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**摘要** 取典型的胚胎致畸剂——全反式视黄酸对热带爪蟾(*Xenopus tropicalis*)胚胎进行24, 36和48 h暴露.结果表明, 2, 10和50  $\mu\text{g} \cdot \text{L}^{-1}$  视黄酸暴露对胚胎的存活率没有影响, 对胚胎的生长和发育却有明显的抑制作用, 并导致所有胚胎出现畸形现象, 说明视黄酸对热带爪蟾胚胎具有极强的致畸性, 同时显示了热带爪蟾胚胎对视黄酸的敏感性.视黄酸主要引起胚胎脑部缩小、眼睛色素减少、围心腔水肿和尾巴弯曲等多种畸形类型. 24, 36和48 h后, 暴露组脑部畸形指数和眼睛畸形指数较对照组均有明显增加, 并表现出较好的浓度-效应关系, 而时间-效应关系不明显, 表明视黄酸对脑和眼部的影响主要发生在暴露的前24小时; 48 h后尾部的畸形指数相对于24 h有明显的升高.将视黄酸导致的胚胎畸形类型与污染物三丁基锡对比, 表明视黄酸致畸特征图谱在三丁基锡致畸机制的研究中有重要的参考价值.由此可见, 有可能将FETAX实验发展为一种基于致畸机制的发育毒性检测方法.

**关键词:** 视黄酸 爪蟾 胚胎 致畸 视黄酸 爪蟾 胚胎 致畸

**Abstract:** In this study, *Xenopus tropicalis* embryos were exposed to a known teratogen, all-*trans* retinoic acid (RA), for 24, 36 and 48 h. Exposure to 2, 10 and 50  $\mu\text{g} \cdot \text{L}^{-1}$  RA showed no effects on the survival rate of embryos, but it significantly inhibited the growth and development of embryos. RA also led to malformations in all embryos, which suggests that RA is a strong teratogen, and *X. tropicalis* is very sensitive to RA. The most characteristic malformations were small brains, less pigmentation in eyes, pericardial edema and bent tails. After 24, 36 and 48 h of exposure, the brain teratogenic index and eye teratogenic index were significantly increased in the treatment groups, and these effects showed a good concentration-effect but not time-effect relation. The tail teratogenic index was higher in embryos after 48 h of exposure than that after 24 h of exposure. The comparisons of teratogenic phenotypes induced by RA and tributyltin indicate that RA is a good reference for revealing the mechanisms of tributyltin-mediated teratogenicity. Our results also suggest that FETAX might be modified as an assay to study the mechanisms of contaminants in future.

**Key words:** *Xenopus tropicalis* embryos teratogenesis retinoic acid *Xenopus tropicalis* embryos teratogenesis

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- [1] 刘俊奇;刘青坡;曹庆珍;钱丽娟;郭素珍;施华宏. 全氟辛磺酸对于爪蟾的甲状腺激素干扰效应[J]. 华东师范大学学报(自然科学版), 2010, 2010(4): 118-124.
- [2] 钱丽娟;郭素珍;曹庆珍;刘俊奇;施华宏. 运用爪蟾变态实验检测镉的甲状腺激素干扰效应[J]. 华东师范大学学报(自然科学版), 2010, 2010(2): 58-66.
- [3] 秦芬;李强;徐晓倩;曾错;赵云龙. 隆线蚤孤雌卵胚胎发育的形态学研究[J]. 华东师范大学学报(自然科学版), 2010, 2010(2): 67-76.
- [4] 王蕾;刘青坡;郭素珍;钱丽娟;施华宏. 三丁基锡对非洲爪蟾甲状腺组织结构的影响[J]. 华东师范大学学报(自然科学版), 2008, 2008(6): 75-81.
- [5] 林爱福;贾方钧;郑福军;王群;严缘昌;李逸平. 斑马鱼Cyclin C的cDNA克隆及其在发育过程中的表达[J]. 华东师范大学学报(自然科学版), 2008, 2008(2): 71-77.
- [6] 姚俊杰;赵云龙. 罗氏沼虾胚胎发育过程中的脂类变化[J]. 华东师范大学学报(自然科学版), 2006, 2006(4): 103-109.
- [7] 赵艳民;赵云龙;王群;姚俊杰;安传光;段晓伟. 日本沼虾胚胎发育时期消化酶活力和氨基酸含量[J]. 华东师范大学学报(自然科学版), 2006, 2006(2): 75-81.
- [8] 罗文;周忠良;赵云龙;杨志彪;张明凤. 红螯螯虾胚胎发育过程中蛋白质含量及氨基酸组成的分析[J]. 华东师范大学学报(自然科学版), 2004, 2004(1): 88-92.
- [9] 李红;王群;赵云龙;赵艳民. 日本沼虾胚胎复眼发生的研究[J]. 华东师范大学学报(自然科学版), 2003, 2003(3): 56-60.