

c-fos-like蛋白在尖唇散白蚁繁殖蚁和工蚁性腺中的表达

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Expression of c-fos-like protein in the gonad of reproductives and workers of *Reticulitermes aculabialis* (Isoptera: Rhinotermitidae)

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摘要

为了探讨c-fos原癌基因在白蚁生殖品级和非生殖品级性腺发育中的作用,揭示白蚁不同品级性腺发育的调节机理,本研究运用免疫细胞化学定位方法对尖唇散白蚁*Reticulitermes aculabialis*繁殖蚁和工蚁精、卵发生过程中的c-fos蛋白表达进行了研究。结果显示:雌性繁殖蚁在末龄若虫期的卵子发生过程中有c-fos-like表达,c-fos-like免疫阳性物质定位于生长期的卵母细胞核和滤泡细胞核中;而繁殖蚁成虫的卵子发生过程中没有c-fos-like免疫阳性反应。雄性繁殖蚁在末龄若虫期时精子发生过程中没有c-fos-like表达,而发育到成虫期有c-fos-like免疫阳性反应,阳性物质定位于精原细胞的细胞核中。工蚁精、卵发生过程中均没有c-fos-like的表达。结果提示:c-fos在调节繁殖蚁精子和卵子发生方面有重要作用,c-fos可能通过调节精原细胞增殖参与精子的发生;在卵巢中可以直接作用于生长期的卵母细胞和滤泡细胞来调节卵子的发生。在工蚁性腺中c-fos表达缺失可能导致卵母细胞和滤泡细胞无法正常发育,精原细胞停止增殖而使精子发生处于相对抑制状态。工蚁性腺退化不育可能与c-fos没有正常表达有关。

关键词:

Abstract:

Proto-oncogene product c-fos protein (Fos) plays a central role in the regulation of cellular growth and differentiation. The role of Fos in the regulation of germ cell progression during spermatogenesis and oogenesis has been studied in vertebrates, but little is known about the expression and role of Fos during spermatogenesis and oogenesis in insects. In order to identify c-fos proto-oncogene in different gonad of termites and the difference of germ cell development between non-reproductive and reproductive caste, the expression of Fos was examined in gonads of termite *Reticulitermes aculabialis* with immunocytochemical localization method. The results showed that c-fos-like protein (Fos-like) existed in the nucleus of oocytes and follicle cells at the growth stage of oogenesis in the last instar nymphs, but its expression was not detected during the oogenesis in workers. During the spermatogenesis of the termite, Fos-like immunopositive substance was localized in spermatogonial nuclei of reproductive adults, no immunoreactivity for Fos-like was detected in spermatogenesis of workers. The results suggest that Fos-like activity exerts a regulatory role in the spermatogenesis and oogenesis of the termite. The spermatogenesis is affected by Fos-like which directly regulates spermatogonial proliferation to form sufficient spermatozoa for fertilization, and Fos-like is also required in follicle cells for oocyte growth. Therefore, the absence of c-fos expression in the germ cells of worker may be one of reasons that the worker caste is curtailed in fertility to functional or complete sterility.

Key words:

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