遗传学报　1988 15 (2): 129-137　ISSN: 0379-4172　CN: 11-5450/R

淡色库蚊敏感品系与敌百虫抗性品系乙酰胆碱酯酶同工酶在发育过程中的变异

黄 刚, 黄品籤, 蒋成山, 刘祖洞

1. 中国科学院上海昆虫研究所；2.复旦大学遗传学研究所，上海

收稿日期　修回日期　网络版发布日期　接受日期

摘要　本文从电泳和酶活力两个方面观察和分析了淡色库蚊（Culex pipiens Coq.）的敏感品系（SEN）和敌百虫抗性品系（RD）的AchE同工酶在整个发育过程中不同性别及身体不同部位产生的变异，从中获得了一些颇有意义的结果。 1．从SEN品系与RD品系AchE同工酶在整个发育过程中的比较发现，AchE质和量上的变异与敌百虫抗性的产生密切相关。 2．一切品系的各个发育阶段，在凝胶相同的位置上都有一条相同的AchE酶带，这是主带。 3．在SEN品系和RD品系的雌成蚊中，有一条活力很高的AchE慢带，此带仅在雌成蚊的胸部存在，显示了性别和部位差异，称它为特征慢带。此带的活力，RD品系高于SEN品系。 4．以三带喙库蚊（Culex tritaeniorhychus）的敏感品系及其抗双硫磷品系与淡色库蚊作比较，发现其雌、雄成蚊中除共有的主带外，还有一条较主带稍慢的AchE带，此带相当于淡色库蚊雌成蚊中的特征性慢带，但不存在性别差异，此带的泳动速度要略快于特征性慢带。 5．雌成蚊胸部的特征性慢带轻胰蛋白酶的限制性处理后，泳动位置发生改变，变动后的新位置恰与三带喙库蚊慢带的位置相同。两种库蚊在进化上似乎存在着某种联系。位移后的特征性慢带活性未变。 6．用伴性红眼区分幼虫性别后发现，淡色库蚊不同性别的幼虫和蛹，都存在1-3条向正极移动但活性很弱的快带，一旦羽化即全部消失。 7．从测定淡色库蚊蜕皮激素的结果看到，AchE存在的性别差异以及在RD雌成蚊中的高活性，似乎都与蜕皮激素的调节无关。

关键词　杀虫剂,抗性,乙酰胆碱酯酶,同工酶

分类号

Variations During Developmental Process of AchE Isoenzyme In Susceptible Strain and Depterex-resistant Strain of the Cuiex Pipiens Pallens Coq.

Huang Gang, Huang Pinjian, Jiang Chengshan, Liu Zudong2

Institute of Entomology, Academia Sinica, Shanghai; 2. Institute of Genetics,,Universtiy,Shanghai

Abstract

This paper showed the results of observation and analyses to the variations in AchE isoenzyme of the susceptible strain (SEN) and edpterex-resistant strain (RD) during the entire developmental process in different sexes and parts of the body in Culex pipiens pallens Coq. by using the mothods of electrophoresis and enzyme activity. Significant results were are follows:In all strains during different developmental stages, there existed an identical AchE band. After determinating the sexing of larvae using the sex-linkage red-eye, we found that there existed 1-3 bands moving fast towards the anode bat with relatively weak activity. The pupae is same as larvae, In female adults of both SEN and RD strains, there was a high activity AchE "slow-moving" band. This band is present only in the thorax of adult female mosquitoes, showing sexual and positional variations. We called it a characteristic slow-moving band. The activity of this band in RD strain is higher than that of the SEN strain. When comparing the susceptible and biothionresistant strain of Culex tritaenirhynchus and Culex pipiens pallens, we found that other than the major band in adult female and male, there was a band slower-moving band of Culex pipiens pallens. There was no sexual variations. But the of electrophoretic speed this band was faster than that of the characteristic slow-moving band. The characteristic slow-moving band from thorax of adult female, after limited treatment with trypsin, changed its electrophoretic position. The change in position coincided with the slow-moving band of Culex tritaenirhynchus, It seemed that the evolution of the 2 Culex species are related. After the change in position, the activity of the new band was kept unchanged. It was shown From the determination of β-ecdyson in Culex pipiens pallens that the sexual variations in AchE and the activity in RD adult female were rot related to β-ecdyson regulation.From comparisons of AchE isoenzymes of susceptible and resistant strains throughout the developmental process, we found that the changes in quality and quantity of AchE was closely related to dipterexresistance.

Key words Insecticide Resistance Acetylcholinesterase Isoenzyme

DOI:

通讯作者