

研究论文

三唑磷、氟虫腈及其复配剂对四种miRNAs在斑马鱼组织中表达的影响

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摘要:

MicroRNAs (miRNAs) 是一类长约22 nt的非编码小RNA, 在基因表达中起重要调控作用。已有研究表明, 农药三唑磷和氟虫腈能影响斑马鱼全鱼组织中部分miRNAs的正常表达, 但未见对miRNA表达的组织特异性的研究。本研究采用荧光定量PCR技术研究了经三唑磷微乳剂、氟虫腈微乳剂及其复配剂处理后, 四种miRNA (miR-21、miR-128、miR-155和miR-181a) 在斑马鱼脑和眼睛中表达的变化情况。与助剂处理相比, 三唑磷处理后, miR-21在斑马鱼脑组织中表达下调, 眼睛中表达上调; 复配剂处理后, miR-128在斑马鱼脑和眼中的表达均下调。与空白对照相比, 三唑磷或氟虫腈处理后, miR-155在斑马鱼脑和眼中的表达均下调。复配剂处理后, miR-181a在斑马鱼脑组织中表达下调, 眼睛中表达上调。结果表明, 这4种miRNAs的表达存在组织特异性。

关键词: MicroRNA 氟虫腈 三唑磷 斑马鱼 荧光定量PCR

Effects of Triazophos, Fipronil and Their Mixture on Expression of Four miRNAs in Zebrafish Tissues

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Abstract:

MicroRNAs (miRNAs) are a class of small non-coding RNAs with the length of about 22 nt. It has been documented that miRNAs play an important role in regulation of gene expression. It is showed that the normal expression of partial miRNA in zebrafish tissues could be influenced by treatments of pesticide triazophos or fipronil, however, the tissues-specific miRNA expression has not been characterized yet. The expression changes of 4 miRNAs, namely miR-21, miR-128, miR-155 and miR-181a, in zebrafish brain and eye tissues after treated by triazophos microemulsifier, fipronil microemulsifier or their mixture were evaluated using real-time PCR technique. Compared with adjuvant control, miR-21 is downregulated in zebrafish brain tissue after treated by triazophos microemulsifier, while it is upregulated in eye tissue; miR-128 is downregulated in brain and eyes of zebrafish after treated by fipronil plus triazophos microemulsifier. Compared with the untreated control, miR-155 is downregulated in brain and eyes of zebrafish after treated by fipronil or triazophos microemulsifier; miR-181a is downregulated in brain of zebrafish after treated by triazophos microemulsifier, while it is upregulated in their eyes. The results demonstrate that the expression of 4 miRNAs is tissue-specific.

Keywords: MicroRNA Triazophos Fipronil Zebrafish Real-time PCR

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