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Molecular characterization and the function of argonaute3 in RNAi pathway of *Plutella xylostella*

Muhammad Salman Hameed
Fujian Agriculture and Forestry University, China

Argonaute (Ago) protein family plays a key role in the RNA interference (RNAi) process in different insects including Lepidopteran. However, the role of Ago proteins in the RNAi pathway of Plutella xylostella is still unknown. We cloned an Argonaute3 gene in Plutella xylostella (PxAgo3) with the complete coding sequence of 2832 bp. The encoded protein had 935 amino acids with an expected molecular weight of 108.9 kDa and an isoelectric point of 9.29. It contained a PAZ (PIWI/Argonaute/Zwile) domain and PIWI (P-element-induced wimpy testes) domain. PxAgo3 was classified into the Piwi subfamily of Ago proteins with a high similarity of 93.0% with Bombyx mori Ago3 (BmAgo3). The suppression of PxAgo3 by dsPxAgo3 was observed 3 h after treatment and was maintained until 24 hours. Knockdown of PxAgo3 decreased the suppression level of PxActin by dsPxActin in Plutella xylostella cells, while overexpression of PxAgo3 increased the RNAi efficiency. Our results suggest that PxAgo3 play a key role in the double stranded RNA (dsRNA)-regulated RNAi pathway in *Plutella xylostella*.

msuleman2941@yahoo.com

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