

Similar Differentiation Patterns Between *PBP* Expression Levels and Pheromone Component Ratios in Two Populations of *Sesamia nonagrioides*

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Abstract Pheromone-binding proteins (PBPs) are thought to contribute to the specificity of the pheromone detection system through an initial selective binding with pheromone molecules. Here, we report different expression levels of *PBP* transcripts in the antennae of two populations of the stemborer *Sesamia nonagrioides* (Lepidoptera: Noctuidae), one collected in Europe and one in sub-Saharan Africa. The three *PBP* transcripts previously identified in this species were found to be expressed in both male and female antennae. Whereas *PBP3* did not show any differential expression, *PBP1* and *PBP2* appeared to be expressed differently according to the population origin and sex. Simultaneously, we measured and compared the ratio of the three components of the *S. nonagrioides* pheromone blend (Z11-16:Ac; Z11-16:OH; Z11-16:Ald) in females of the two populations. The ratio of Z11-16:OH and Z11-16:Ald varied significantly according to the population origin of this species. Cluster analyses revealed

similar differentiation patterns between *PBP1* and *PBP2* expression levels and the ratios of Z11-16:OH and Z11-16:Ald. Different female sexual signals may thus correspond to different male reception systems, which are adjusted by the *PBP* expression levels, thereby ensuring optimal communication within populations.

Keywords Stemborer · Lepidoptera · Noctuidae · Pheromone-binding proteins · Quantitative PCR · Sex pheromones

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