

Poster Presentation

[PS02] ポスター発表(学生 B:コアタイム1)

Sat. Mar 30, 2024 11:30 AM - 12:30 PM Sakura (Student) (Sakura)

[PS02-07] Two transglutaminases play novel roles in innate immunity
in Oriental Armyworm, *Mythimna separata*

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Transglutaminases (TGases) play crucial roles in innate immunity, but their immunomodulatory effects in insects remain poorly understood. This study is to investigate whether TGases are involved in immune responses in crops pest *Mythimna separata*. By surveying the genome data of *M. separata*, two TGases were identified. We found that injecting larvae with Gram-negative bacteria and Gram-positive bacteria induced the expression of both genes. We next produced recombinant TGase proteins using the *E. coli* expression system. Immunofluorescence and Western blotting confirmed both proteins binding to bacteria, resulting in agglutination in a Ca²⁺-dependent manner. Larval injection with these proteins significantly enhanced phagocytic ability, improving pathogen resistance and extending longevity. RNA interference (RNAi) showed that TGase gene suppression reduced hemocyte capacity to engulf bacteria, increasing susceptibility to infection and shortening lifespan. These findings underscore the pivotal role of TGases in *M. separata*'s immune defense.