

Role of SRPN2 in Melanisation: Systemic and Parasite Centered Functions.

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We report phylogenetic and functional analysis of genes encoding three mosquito serpins (SRPN1, 2 and 3), which resemble known inhibitors of prophenoloxidase-activating enzymes (PPAEs) in other insects. Following RNAi induction by dsRNA injection, knockdown (KD) of *SRPN2* in adult *Anopheles gambiae* produced a notable phenotype: appearance of melanotic pseudotumours, which increased in size and number over time, indicating spontaneous melanization and association with an observed life span reduction. Furthermore, KD of *SRPN2* strongly interfered with invasion of *A. gambiae* midguts by the rodent malaria parasite, *Plasmodium berghei*. While ookinete formation was not affected, infection prevalence was reduced by 55%. Ultimately, 97% of all invading parasites were lost in *SRPN2-KD* compared to control mosquitoes; 18% of ookinetes were melanized and 79% were lysed and cleared.