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Proteomic characterization of *Haemaphysalis longicornis* saliva and determination of saliva-host interaction during blood-sucking periods

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Abstract: *H.longicornis* saliva proteomic profile, role of histamine-antihistamine and cytokines interaction with host were design and performed in this work.

Methods: For salivary protein LC-MS/MS was performed. Histamine and antihistamine were administered at different interval to see its effect on detachment during attachment and fast feeding stage, respectively. Histamine concentration was measured by ELISA and differences in expression of genes related to immune response were measured by qPCR.

Results: A total of 135 tick salivary proteins were identified of which 30 proteins were found exclusively in fully engorged nymph saliva, 74 in fully engorged adult females, and 31 were detected in both stages. Ticks exhibited a higher detachment rate (30.1%) 12 hours after histamine application during attachment stage and antihistamine injection (25.44%) at 96 hours during fast feeding stage. There is an average increases in body weight were observed for histamine treated group and decrease in body weight was observed in antihistamine treated *H.longicornis* in compare to control. Blood histamine concentration during fast feeding stage was significantly higher in compare to attachment and no-infested groups. Gene expression of TNF α , IFN γ were significantly ($P<0.05$) decrease in all stages of blood sucking both in nymph and adult ticks, while expression of IL-4, IL-6 and IL-10 were increased 1.3 to 7 folds in adult infested rabbits in compare to non-infested with the exception of IL-6 in nymph infested rabbit. IL-6 significantly decreased in nymph infested rabbits and IL-2 was not expressed in either nymph or adult *H.longicornis* treated rabbit. These data can provide a deeper understanding to the biology of *H. longicornis*.

Biography

Myungjo You's lab has focused on unveiling how hosts response to hard tick infection. They have used various infectious models to prove host responses upon tick infection. In recent, You's lab has found the saliva from nymph and adult females of *Haemaphysalis longicornis*: a proteomic study (Parasite & Vectors). Moreover, You's lab is expert on tick and tick-borne disease.

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