

***In vitro* feeding assay to test the protective effects of Poultry Red Mite antigens**

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Dermanyssus gallinae (De Geer), the poultry red mite, is a blood-feeding ectoparasite that infests many bird species. We have used an *in vitro* feeding assay to allow the identification of protective *D. gallinae* antigens that may have potential as vaccine candidates. Homogenised mites were extracted sequentially with PBS, Tween 20, Triton X100 and urea giving four protein fractions. Five experimental groups of Lohmann Brown hens were used to generate antibodies; four groups were injected with each of the protein fractions in QuilA adjuvant and a control group was injected with adjuvant only. Booster injections were administered two and four weeks after initial immunisation. Eggs were collected throughout the experiment and soluble IgY antibodies were extracted from eggs collected at week six post-injection. Western blots, performed using post vaccination antibodies from test and control groups, revealed a strong antibody response against a range of injected proteins. Fresh chicken blood, supplemented with antibodies raised against these protein fractions, was fed to mites in an *in vitro* feeding assay in order to determine whether the antibodies have an anti-mite effect. It was found that the strongest anti-mite effect was seen against the PBS-soluble protein fraction. As the quantity of antibodies, generated against the PBS-soluble protein fraction and the control, that were fed to the mites was increased, an enhanced anti-mite effect was seen during this experiment.

Keywords: *Dermanyssus gallinae*, poultry red mite, vaccine, protective antigens