




## Effects of nutritional supplements on population proliferation and nutrients content of *Acarus siro*\*

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Using natural predatory mites to control stored product pests is an important green grain storage technology. As a dominant prey of *Cheyletus malaccensis* Oudemans (Cheyletidae), *Acarus siro* Linnaeus (Acaridae) can ensure the population expansion of *C. malaccensis* so as to realize its prevention and control ability. The population of *A. siro* raised on flour only increased slowly. In order to explore the effect of feed composition on the propagation efficiency of *A. siro*, orthogonal experiments were used to evaluate the changes of population proliferation of *A. siro* by adding different nutritional supplements, including yeast powder, sugar and L-valine to wheat bran under the same experimental condition (26 °C, 75% RH, dark, wheat bran of 50 g, moisture content 11%–12% and 6,000 individuals of *A. siro*). The results showed that the population density of *A. siro* was the highest under the combination of 15% yeast powder, 17% sugar and 1% L-valine, indicating that it is the optimum feeding condition. And the maximum population density was 50,722 individuals/g while it was 10,388 individuals/g raised with wheat bran only. At the same time, the nutrient contents of *A. siro* under the optimal condition were determined. Protein content was determined by BCA method, soluble sugar content was determined by anthrone colorimetry technique, and free fatty acids content was determined with a kit. The results showed that the contents of soluble sugar, protein and free fatty acids of *A. siro* in treatment groups were higher than those in the control group. Free fatty acid showed the greatest increase (653%), while soluble sugar and protein increased 96% and 71%, respectively. The results demonstrated that the population density of *A. siro* was correlated with the content of supplemental nutrients. This study may serve as a useful reference for the feed optimization for *A. siro* and large-scale rearing of *C. malaccensis*.

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