Enhancing Nutrient Values of Gryllodes sigillatus for Future Food Sustainability

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This project was inspired by recent studies expressing a substantial need to increase food supplies. To accommodate the expected human population growth, developing more efficient protein sources will be required in the future. Entomophagy, the practice of consuming insects, is a very promising potential solution to this problem. Despite Western perceptions, this practice offers both nutritional and environmental benefits. With the goal of elevating nutrient levels and simultaneously utilizing a waste product, this study attempted to increase nutrient concentrations in Gryllodes sigillatus, commonly known as banded crickets, by incorporating grape seed extract into their diet. Crickets were selected for experimentation due to their high protein content, availability, existing presence in global food chains, and ability to survive on diverse diets. Grape seed extract, a product of an organic side-stream of the wine industry, was chosen for its high nutrient levels. Three other dietary conditions were tested for comparison: cornmeal, blueberries, and spinach. Crickets were reared for a minimum of 15 days on these diets before evaluating their concentrations of polyphenols, antioxidants, and protein with colorimetric assays. Initially, the dietary conditions did not appear to impact nutrient levels; no statistical significance was shown between their averages. However, further examination indicated the presence of a time order factor which affected the results, and this was confirmed by analysis of variance. Thus, it is strongly suggested that factors exist which do significantly increase nutrient quantities. This warrants further investigation to identify such variables and determine their associated levels which maximize nutrient concentrations.

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