

Antioxidant Characterization of Soft Jelly Prepared from *Baccaurea angulata* Fruit and Trigona Bee Honey Using Response Surface Methodology

Nur Aizura Mat Alewi & Muhammad Ibrahim*

Department of Nutrition Sciences, Kulliyyah of Allied Health Sciences, International Islamic University Malaysia

ABSTRACT

Objectives/Research Problem: Honey has been known for centuries for its medicinal properties in treating a wide variety of ailments. *Baccaurea angulata*, which contain various types of antioxidant compounds, are also beneficial to the human body. In this study, the effects of *B. angulata* (X_1 : 15–85 ratio) and Trigona bee honey (X_2 : 15–85 ratio) on the overall level of the total antioxidant capacity (Y_1) were investigated.

Materials and Method: Response surface methodology was used to produce the optimal formulations/combinations of *B. angulata* and Trigona bee honey that could achieve the highest recovery of total antioxidant capacity (TAC) of the soft jelly products.

Results and Discussion: The highest TAC readings were obtained from the centre points where the ratio of *B. angulata* and Trigona bee honey were 50:50. The second order polynomial model ($y = 3.83 - 0.082X_1 + 0.12X_2 - 0.31X_1^2 - 0.43X_2^2$) produced satisfactory results of the experimental data as the coefficient of determination (R^2) for TAC was 0.9758, while its R^2 (adjusted) was 0.9585, with an overall regression value of $p < 0.0001$. The p-value for the lack-of-fit test was noted to be high, with a reading of 0.8041 for the TAC analysis, signifying the suitability of the model in accurately predicting the variations. Predicted values for of TAC was in agreement with those of the experimental values.

Conclusion: Overall, the response surface methodology was successfully implemented in producing a model/equation that could be used in optimizing the jelly formulations of *B. angulata* and Trigona bee honey. In conclusion, due to their rich antioxidant properties, *B. angulata* and Trigona bee honey have high potentials to be used as food supplements owing to their nutritional and health benefits.

KEYWORDS: Response Surface Methodology, Total Antioxidant Capacity, *Baccaurea angulata*, Trigona Bee Honey

*CORRESPONDENCE: aizura.alewi@gmail.com