DETECTION OF FOAM ADULTERATION IN HONEY USING ULTRAVIOLET-VISIBLE SPECTROSCOPY



Amponsah, P.A., Mensah, E.O., Mensah, E.T., Issaka, H., Oduro, V.O., & Zaukuu, J-L.Z* Department of Food Science and Technology Faculty of Biosciences

zaukuu.jz@knust.edu.gh



INTRODUCTION

Honey's great nutritional content and health benefits merits value for consumers and on the market and thus susceptible to food fraud

Common Adulterants e.g Sugar Syrups, water and corn syrups(Georgiou, 2016)



RESULTS AND DISCUSSION

Adulterated honey recorded high pH values as compared to pure honey

Color hues were affected as adulterated recorded low a* (redness) and I* (lightness)

Foam constitutes latex, a secondary by product rich in polyphenols thus adulterated honey recorded high antioxidant activity





Figure 1 Survey to ascertain the practice of honey adulterated with foam Manufacturing of latex foam involves addition of volatile organic compounds like formaldehyde which can be hazardous etc (Shahinuzzaman et al.,2020)



Figure 2 : (A) Principal Component Analysis of Adulterated honey and (B) Linear Discriminant Analysis of Market samples

Table 2.0: Partial least square regression of the measured parameters in honey

	RMSEC	R2C	RMSECV	R2CV
рН	0.1785	0.9481	0.3641	0.7841
Concentration	0.0494	0.9992	0.3315	0.9639
Antioxidants	6.1266	0.5545	7.3561	0.3578

CONCLUSION

Addition of foam impacted the quality indicators of honey increasing the pH values

Chemometric model employed were effective as patterns were observed, high classification accuracies and the robustness of the model in predicting foam concentration

RESULTS AND DISCUSSION

Table 1.0: Physicochemical characteristic of pure honey and adulterated honey

Sample	рН	L	а	b	DPPH(%)
Pure	4.52±0.02	32.28±0.38	11.16 ± 0.06	10.94 ± 0.28	44.31±0.37
01	5.36 ± 0.11	26.08 ± 0.20	6.40 ± 0.10	4.68±0.29	62.67±2.52
1.5	5.44±0.02	27.07±0.02	7.17 ± 0.10	5.57±0.21	68.18±0.46
03	5.54 ± 0.02	23.02±0.02	1.31 ± 0.02	0.38 ± 0.01	57.41±0.96
05	5.94 ± 0.05	22.75±0.07	0.64 ± 0.01	0.08 ± 0.01	58.74±0.55

ACKNOWLEGDEMENT

We extend our gratitude to the Easmus+ mobility partnership between the Hungarian University of Agriculture and Life Sciences and the Kwame Nkrumah University of Science and Technology

We extend gratitude to the Biosystems and Food Engineering (BiosysFoodEng) Conference

REFERENCES

- Georgiou, C.A. (2016) 'Food authentication: Techniques , trends & emerging approaches', *Trends in Analytical Chemistry* [Preprint]. doi:10.1016/j.trac.2016.02.026
- Shahinuzzaman, M., Yaakob, Z., Anuar, F.H., Akhtar, P., Kadir, N.H.A., Hasan, A.M., Sobayel, K., Nour, M., Sindi, H., Amin, N. and Sopian, K., 2020. In vitro antioxidant activity of Ficus carica L. latex from 18 different cultivars. *Scientific reports*, 10(1), p.10852