Malaysian Journal of Analytical Sciences (MJAS)
Published by Malaysian Analytical Sciences Society

Editorial: Utilization Modern Analytical Instruments for Food and Plant Analysis

Wan Mohd Afiq Wan Mohd Khalik and Sabiqah Tuan Anuar

Malaysian Analytical Sciences Society (ANALIS)

Food or plant analysis is a branch study of scientific procedures to describe the characteristics of foods, plants and their constituents. Major analytical instruments are used to provide knowledge about a variety of food or plant characteristics, including chemical compositions, chemical structures, physicochemical properties or sensory qualities [1]. The development of analytical methods and the selection of the best instrument for food and plant analysis have always been challenging, mostly due to a wide range of their physicochemical properties. Additionally, improper pre-treatment can alter analyte structure or reduce extraction efficiencies. In the latest publication April 2021, we highlight four research works showcasing the use of analytical instrumentation for the intended purpose.

First paper wrote by Sairi et al. [2] describe the application of impedance biosensor for detection of plant disease namely blood disease bacterium, commonly found in banana crops. Research work highlights in detail the capability of electrochemical impedance spectroscopy for the detection of target analyte at low ranging concentrations, 10^1 to 10^3 CFU/mL. Low detection limit for blood disease bacterium measurement was achieved using silicon-on-insulator nanogap sensor. Thus, it was deemed suitable to be used for routine analysis.

Second paper describe the physiochemical protein and antioxidant profile for beneficial uses of *Apis* and *Trigona* honeys [3]. Analytical instrumentation namely liquid chromatography was used to determine the sugar content and hydroxymethylfurfural. Other instruments used include the photometer (colour), refractometer (total soluble solids), and microplate spectrophotometer (total phenolic, flavonoid, protein content), respectively.

Third research work discuss the development of voltametric technique based on gold electrode for determination of arsenic residue in mango and banana samples [4]. The presence of arsenic was believed to be part of the impurities in calcium carbide used to ripen the climacteric fruits. Analysis of real sample and validation of research works were performed using differential pulse anodic stripping voltammetry.

Fourth documented paper by Jose et al. [5] discuss the potential of mulberry bark, *Morus rubra* Linn. for remediation of metal residue in aqueous solution. Characterization of biochar was evaluated using different analytical instruments such as gas chromatography-electron ionization-mass spectrometry (identification of main compounds), scanning electron microscope (surface morphology), energy dispersive X-ray spectroscopy (compositional analysis), Fourier transform infrared spectroscopy (identification of functional group), and atomic absorption spectroscopy (determination of metal content), respectively. Finding from the study reveals the capability of produce biochar's to remove lead pollutant up to 60% of the initial concentration.

Editorial looks forward to receiving new submission on related topics for the forthcoming publication. Innovative research works and review papers on instrumental analytical techniques applied to food and plant analysis are most welcome.

Happy reading and best wishes,

Wan Mohd Afiq Wan Mohd Khalik
Executive Editor
Sabiqah Tuan Anuar
Associate Editor

References

1. McClements, J. (2003). Analysis of food product. Access from McClements homepage for food science course https://people.umass.edu/ ~mcclemen/581Introduction.html
2. Sairi, M., Shafie, K. A., Ismail, A. S., Said, N. A. M., Masdor, N. A., Salleh, N. H. S, Teik, T. S., Bunawan, S. N., Abdul Talib, M. A., Jaffar, N. S., and Raship, I. (2021). Electrochemical impedimetric biosensor based on silicon-on-insulator nanogap for the detection of banana blood disease bacterium. *Malaysian Journal of Analytical Sciences*, 25(2): 184-192.
3. Ismail, N. I., Kadir, M. R. A., Zulkifli, R. M. and Mohamed, M. (2021). Comparison of physicochemical, total protein and antioxidant profiles between Malaysian *Apis* and *Trigona* honeys. *Malaysian Journal of Analytical Sciences*, 25(2): 243-256.
4. Shukri, N. M., Muslim, N. Z. M., Kamal, N. F., and Abdullah, F. (2021). Voltammetric technique for determination of arsenic residues in calcium carbide ripened climacteric fruits. *Malaysian Journal of Analytical Sciences*, 25(2): 268-285.
5. Jose, J. C., Dolina, M. N. and Tan, M. C. (2021). The remediation potential of biochar derived from *Morus rubra* Linn. bark. *Malaysian Journal of Analytical Sciences*, 25(2): 324-340.