

## Editorial Article

# Advancements in Analyzing Food Quality

Savithiry S. Natarajan\*

USDA-ARS, Soybean Genomics and Improvement Laboratory, Beltsville, MD, USA

The continued advancement of analytical technologies enables scientists to enhance their research in characterizing food constituents. In 'The open food science journal' we publish articles related to all areas of food science and technology and make these freely available to researcher worldwide. In this issue, we have solicited contributions from leading authors covering various aspects of food safety, its characterization and the usage of food products.

In this volume, Clemente *et al.* [1] presents the results of analyses of sulfide compounds from different cultivars of garlic using sensitive methodology, solid phase microextraction gas chromatography mass spectrometry (SPME/GC/MS). Garlic has many benefits for human health including anticarcinogenic, antifungal, and antibacterial properties. The high abundance of sulfide in garlic generated significant interest to study different forms of sulfide compounds present in garlic. However, analyzing these sulfide compounds remained a challenge due to their volatility and unstable nature. Clement *et al.* [1] efficiently quantified the sulfide compounds and differentiated organic and non-organic garlic by using Principle Component Analysis (PCA), a commonly used type of multivariate data analysis. Similarly, PCA analysis was used by Amenta *et al.* [2] to analyze the physical and chemical changes of Sicilian extra virgin olive oil caused by thermal treatment. The olive oil was subjected to thermal treatment and the effects on volatile compounds and viscosity monitored using electronic nose gas chromatography and rheology. A review article by Liu and White [3] gives an overview of analytical methodologies to extract, purify, and characterize proanthocyanidins from grape seeds. Proanthocyanidins are polyphenolic compounds that can be found in a form known as condensed tannins, which are abundant in tree barks and the outer skins of seeds. Recent advances in the field of nutraceuticals have shown that polyphenolic compounds found in grapes have beneficial properties, including biological, pharmacological, and chemoprotective, against free radicals and oxidative stress.

Also in this volume, Gao and Rupasinghe [4] reported on a comparative analysis of acidity in juice of 'Honeycrisp' and 'McIntosh' apples in relation to delayed cooling treatments and different controlled atmosphere storage conditions. The authors reported that titratable acidity was decreased over the storage period in response to delayed cooling treatment in both 'Honeycrisp' and 'McIntosh' apples. Also, lower titratable acidity was detected if delayed cooling treatment was followed by storing the apples in refrigerated air as compared to apples stored in controlled atmospheres. This information is useful for reducing the loss of apple fruit quality by managing good practices of different factors including pre-harvest, post-harvest and storing conditions.

In another article in this volume, Perumalla *et al.* [5] reported a study of important safety and control measures to reduce the risk of contamination and inhibit the growth of pathogens during handling and storage of ready-to-eat meat and poultry products. *Listeria monocytogenes* is a common post-processing bacterial contaminant in ready-to-eat meat. This author reported the effects of potassium lactate (PL), a bacteriostatic agent that acts by extending the lag phase of pathogens, and sodium diacetate (SD), a bactericidal agent that acts by lowering the intracellular pH on the bacterial load using low and high fat chicken and turkey hotdog models. Using both compounds the growth of the bacteria was significantly inhibited, thereby prolonging the shelf life of the food products. The authors concluded that fat content had a significant effect on the growth inhibition of the *Listeria monocytogenes* as indicated by high fat samples exhibiting lower growth inhibition from both PL and SD in the chicken and turkey meat systems.

## REFERENCES

- [1] Clemente J, Williams J, Cross M, Chambers C. Analysis of garlic cultivars using head space solid phase microextraction / gas chromatography / mass spectroscopy. *Open Food Sci J* 2011; 6: 1-4.
- [2] Amenta A, Monge M, Lizarraga L, *et al.* Multivariate data analysis of thermally treated sicilian extravirgin olive oils. Coupling of electronic nose, gas chromatography-mass spectrometry and rheology techniques. *Open Food Sci J* 2012; 6: 24-32.
- [3] Liu S, White E. Extraction and characterization of Proanthocyanidins from grape seeds. *Open Food Sci J* 2012; 6: 5-11.
- [4] Gao J, Rupasinghe H. Characterization of 'Honeycrisp' and 'McIntosh' apple juice quality in relation to delayed cooling treatments. *Open Food Sci J* 2012; 6: 12-5.

\*Address correspondence to this author at the USDA-ARS, Soybean Genomics and Improvement Laboratory, Beltsville, MD, USA; Tel: (301)504-5258; Fax: 301-504-5728; E-mail: savi.natarajan@ars.usda.gov

- [5] Perumalla A, Hettiarachchy N, Over K, *et al.* Effect of potassium lactate and sodium diacetate combination to inhibit *Listeria monocytogenes* in low and high fat chicken and turkey hotdog model systems. *Open Food Sci J* 2012; 6: 16-23.

---

Received: April 20, 2013

Revised: May 02, 2013

Accepted: May 07, 2013

© Savithiry S. Natarajan; Licensee *Bentham Open*.

This is an open access article licensed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted, non-commercial use, distribution and reproduction in any medium, provided the work is properly cited.