**Functional Foods Processing: Maximising Consumer Benefit and Producer Confidence**

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Functional Foods Processing: Maximising Consumer Benefit and Producer Confidence

About the Editors:

Dr. Catherine Birch is a Visiting Research Fellow at Newcastle University. Her research interests include the use of bioactive compounds for functional foods and nanomaterials incorporating bioactive compounds for active packaging applications. Additional areas of expertise include in vitro evaluation of toxicity and cellular stress models of inflammatory diseases.

Professor Graham Bonwick is a Senior Lecturer in the Institute for Agri-Food Research and Innovation at Newcastle University and Lead Scientist at Fera Science Ltd. His expertise in research and teaching is primarily focussed on food safety and environmental quality, with a focus on contaminants in the food supply chain. The exploitation of agri-food by-products for food and packaging applications is an area of active research.

Both authors are involved in the use of biomolecules and nanomaterials for use in rapid diagnostics for food or feed quality and safety, as well as active and intelligent packaging.
Editorial:

Functional Foods Processing: Maximising Consumer Benefit and Producer Confidence

There has been significant growth in the development of functional food categories over recent years. Manufacturers have the opportunity to exploit new developments in product categories that are aimed at defined population groups, such as elderly consumers or the sports market. Predicted growth in sales is estimated at 10 – 12% per year, with total sales of functional food products predicted to reach 442 billion $ USD by 2022 (Statistica 2018). However, development of new products must be validated with strong scientific evidence. Without initial in-vitro testing and subsequent human clinical trials, it will be difficult to determine if beneficial compounds incorporated into these products, for example polyphenols, actually reach their target tissue where they exert their anticipated beneficial effect.

In this special edition of ‘Functional Foods Processing: Maximising Consumer Benefit and Producer Confidence’, the objective is to highlight some recent developments into this rapidly developing field. Furthermore, this special issue aims to present scientific and technological knowledge that demonstrates the potential for further studies in this exciting area.

The study presented by Desai, Brennan and Brennan, demonstrates the addition of salmon fish powder (Oncorhynchus tschawytscha) into pasta and the resulting changes in physiochemical attributes. The results indicated an increase in protein, lipids and energy values. Although the authors demonstrated an increased cooking time, decreased water absorption and product volume, all physical properties were within acceptable limits (Desai, Brennan et al.). The ability to develop high protein versions of widely consumed food products, whilst retaining consumer acceptance, is highly desirable especially for consumer groups such as the elderly.

Amoah et al. reviewed the developments in functional bread processing techniques. Globally, bread is an important food source and many opportunities to enhance the functional properties of this category are presented. The use of techniques such as incorporation of beneficial bioactive compounds by encapsulation techniques has shown a favourable effect on the shelf-life of the product and increased antioxidant status of consumers (Amoah, Cairncross et al.). The development of functional baked goods holds promise in the enhancement of improved nutrition for numerous consumer groups including the elderly, due to the popularity of the category.

Sabbione et al. present their findings from a study into the use of amaranth flour for the production of cookies and their subsequent characterisation. In-vitro digestion studies indicated that these functional cookies released peptides which had the potential to exert an antithrombotic and antihypertensive effect (Sabbione, Suárez et al. 2018 In press). The development of this type of snack food with healthy properties presents an enormous opportunity for manufacturers, as the market for snack-type products continues to grow among consumers looking for healthy alternatives.

Sirven et al. demonstrated the effect of tannase, an inducible enzyme, on gallic acid bioaccessibility and the prevention of browning through oxidation processes in mango (Margarifera indica) juice. A higher level of gallic acid bioaccessibility in juice pre-treated with tannase was demonstrated by in-vitro digestion. This study concluded that an improvement in bioaccessibility of mango polyphenols could be enhanced without significant effects on the quality of mango juice during storage (Sirven, Negrete et al.).
These studies have demonstrated a range of new developments in the functional foods arena with potential opportunities for translation to subsequent commercial applications. Birch and Bonwick reviewed the future of functional foods and although there are good prospects, it was highlighted that attention must be paid to the preservation of the organoleptic properties to ensure consumer acceptance (Birch and Bonwick). Whilst blends of bioactive ingredients may aid retention of acceptable characteristics, it was also identified that the health claims made by manufacturers need to be substantiated by both in vitro and clinical studies. The simple addition of bioactive ingredients to a complex food matrix does not guarantee subsequent bioavailability or achievement of the anticipated beneficial effects.

References:


