

Functional Meals – Threat or Future Opportunity?

As we are discussing packaged meals and options for room service, I wish to bring to everyone's attention the issue of functional nutrition. Currently, I am preparing a special issue of the Journal of Foodservice on this topic as a guest editor. Functional meals, food and nutrition are probably the most significant trends in modern food culture. There is a wide selection of functional ingredients: plant bioactives; antioxidants; dietary fibre, probiotics and prebiotics; functional starches and lipids; bioactive peptides and speciality proteins; vitamins, minerals and botanicals; and other dietary supplements. All of these can have a direct influence on the foodservice industry.



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My personal experience in the field started with testing the viability of probiotics (beneficial gut bacteria) in Australian yoghurts in the 1990s. Later on, I wrote two papers in this journal, 'Value adding with functional meals' and 'Incorporation of probiotics in food service products: an exploratory study'. I participated in high profile events in the field – three conferences on probiotics dominated by medical professionals and organised by the Yakult corporation (in Mexico City in 2006, London in 2008 and Amsterdam in 2009); the joint workshop 'New Applications to health Foods' between Food and Health Network FHN (Norwich Institute of Food Research) and the Swedish Institute for Food and Biotechnology in Norwich in May 2009; the international symposium 'Functional Foods in Europe – International Developments in Science and Health Claims' organised by International Life Science Institute in Malta in May 2007, the New Functional Ingredients and Foods Conference in Copenhagen in April 2003. The themes at these conferences included dietary patterns and health trends, scientific substantiation of claims, regulatory issues, new lipids, bioactive peptides, specialised carbohydrates, pre- and probiotics, anti-oxidants, consumer perception and acceptance. Whilst attending these events, I met delegates of the European Commission, Codex Alimentarius, World Health Organisation, European Food Safety Authority and UK Food Safety Authority. All this helped me conceptualise the ideas of developing functional meals in restaurant settings and Molecular Gastronomy techniques for nutrition purposes. I shared these with some of the readers of this journal at the last International Conference on Culinary Arts and Science (ICCAS) in Stavanger in June 2008.

In fact, functional nutrition could become a strategic option in value adding for the industry under economic and competitive pressures, some are created by the food manufacturing sector offering packaged meals in supermarkets. Experts believe that the functional food market in the retail sector has reached its peak. Perhaps, this is the right time to introduce novel functional meals in restaurants. Food industry has matured from simply offering functional foods to providing advice on health conditions linked to the added ingredients and even diagnostic tools to test the efficacy. For example, the Unilever Corporation supports its Flora branded products with the Love Your Heart campaign and a network of nominated pharmacies in the US to check blood cholesterol. Food retailers and food services, on the other hand, offer 'low tech' solutions to nutrition-related concerns mostly limited to selection of healthy options.

Upmarket food stores with the significant turnover in fresh produce closely follow current trends and actively promote nutritional messages favouring their commodities – the 'five a

day' recommendation to consume fruits and vegetables, for example. In the UK, Waitrose offers the Nutritional Advice Services. In the US, supermarkets compete with pharmacies by providing the over-the-counter drugs. Food services, on the other hand, are not proactive or aggressive enough in the business sense to capture the 'health dollar'. Current initiatives such as the healthy menus could be classified as minor incremental improvements. Food service establishments react to government regulations or consumer pressure with gradual improvements and do not offer radical solutions themselves. In the US and soon in the UK, fast food outlets are required to state the calorie counts on menus or display boards to reduce obesity. Several major fast food chains, such as Pizza Hut, McDonalds and Starbucks, have already subscribed to such schemes, however the industry bodies including the British Hospitality Association are not fully supportive of these initiatives as it increases costs during the economic downturn. Operators seldom see nutrition as an opportunity to create additional value at the time of the abundance of food. In fact, neither functional foods nor functional ingredients have to be highly processed – hence, food service applications could open interesting new options for health effects not possible with the shelf-stable products. There is a potential to go even further than what the food manufacturing industry does – to combine a product and a service in offering personalised nutrition supported by further developments in the so-called nutrigenomics (linking disease and diet with the genetic makeup).

Academics and practitioners could utilise the numerous sources of mostly government-sponsored information. These include the European Union funded on-line database for composition and biological activity of plant-based bio-active compounds (www.EuroFIR.net). In the UK, the Camden & Chorleywood Food Research Association and Food and Health Network FHN (Norwich Institute of Food Research) have expertise in nutrition, mathematical biology, cancer research, plant biochemistry, plant molecular genetics, folate supplementation, glucosinolates, polyphenol and fatty acids. These leading institutions undertook projects on reduction of fat intake during frying by applying edible films, development of the water-in-oil-in-water emulsions mimicking fat, novel nutritionally enriched cultivars, cauliflower cross-bred with the wild varieties to increase the antioxidants content. Another example is the 'Healthy Structuring' project led by the Swedish Institute for Food and Biotechnology. It focuses on metabolic engineering of fruit and vegetables - purple tomatoes with the antioxidant levels similar to those in berries. This also includes the selection of optimum processing parameters to preserve/enhance bioavailability and functionality.

The field of functional nutrition is vast and could be overwhelming. The needs of the food service sector have not been reflected in government/EU funding schemes. Perhaps, technically competent operators supported by academics could lobby for more research in the field. In the future, chefs may re-discover their creativity in designing the new generation of functional meals. Instead of resenting opening bags of ready-to-eat soups and casseroles, they could re-invent themselves as chef-scientists and even chef-doctors.

The list of my papers on functional foods for further reading (I can provide copies of these on request):

1. Rodgers, S. 2009. Development of functional meals with bifidobacteria. *Journal of Culinary Science & Technology* (in press).
2. Rodgers, S. 2009. Novel Concept of a Functional Meal: Technological, Industry and Consumer Perspectives. *Journal of Foodservice* (in press).

3. Rodgers, S. and Young, N. 2008. The potential role of latest technological developments including Industrial Gastronomy in functional meal design. *Culinary Science & Technology* 6 (2-3): 1-18.
4. Rodgers, S. 2008. Technological innovation supporting Industrial Cuisine, Fast Food and Fresh Food production philosophies. *International Journal of Contemporary Hospitality Management* 20 (1): 19-34.
5. Rodgers, S. 2008. Novel applications of live bacteria in food services: probiotics and protective cultures. *Trends in Food Science & Technology* 19 (4), 173-222.
6. Rodgers, S. 2007. Incorporation of probiotics in food service products: an exploratory study. *Journal of Foodservice* 18 (3): 108-118.
7. Rodgers, S. 2004. Value adding with functional meals. *Food Service Technology* 4: 149-158.
8. Rodgers, S. and Odongo, R. 2002. Survival of *Lactobacillus acidophilus*, *L. casei* and *Bifidobacterium lactis* in coleslaw during refrigerated storage. *Food Australia* 54 (5): 185-188.

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