Original Article

Focusing on novel foods: Their role, potential and safety

Mark L Wahlqvist BMedSc, MD (Adelaide)

Asia Pacific Health and Nutrition Centre and FAO Centre of Excellence, Monash University, Melbourne, Victoria, Australia

Novel foods
Novel foods are ones that address newer interests in food taste and appreciation, convenience and utility, and health. They may be a way of repositioning older better known and culturally rooted foods, or they may be altogether new formulations or recipes with new meaning for the consumer.1

Role and potential
If we systematically consider the scope for sustainable and healthy human communities, we arrive at an extensive list of general and particular possibilities and roles for foodstuffs (Table 1).2 These range from how we might eat in a way to safeguard the future food supply, to food adequacy, for those with marginal intakes, to the reduction in the burden of disease at all stages of economic development, and to the complex array of health problems that may shorten lifespan and increase morbidity.

Such an analysis provides much stimulus to the healthcare sector in its quest for more preventive, affordable and effective reductions in the burden of disease, and to the food supply industry, which seeks to provide foods in a way that is enjoyable, safe, secure and, hopefully, health-promoting, aside from being profitable.

Safety
The development of newer or novel foods brings with it elements of the unknown and therefore risk. When it comes to foodstuffs and beverages, it is expected that this risk will be negligible, in contrast to medicinals or pharmaceuticals where some risk is accepted for benefit in the face of a disorder or disease.

As a consequence, it is necessary to have an approach to the development of novel foods that minimizes risk and allows for the evaluation of health outcomes. The requirements in such an approach are enumerated in Table 2.

Implications for regulators, food producers, educators and health-care workers
The field of novel food development is extremely dynamic at present, greater that at any other time in human history; therefore, a regulatory approach that is robust and coherent for all players, and especially consumers, is critical.

References
Table 1. Categorizing food-health relationships for the purposes of food product development

<table>
<thead>
<tr>
<th>Health category</th>
<th>Food characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease related to environmental degradation and methods of food production</td>
<td>Eco-sensitive foods (e.g. produced in sustainable ways; biodegradable or edible packaging; identifiable biosecurity for animal-derived foods; nature of genetic material)</td>
</tr>
<tr>
<td>Food shortage and PEM</td>
<td>Technologies that minimize post-harvest loss, increase shelf life and maintain palatability</td>
</tr>
<tr>
<td>Disease related to protein quality, fat quality and micronutrient status</td>
<td>Nutrient-dense foods; fish or its plant or microbial food surrogates</td>
</tr>
<tr>
<td>Physical inactivity and health (especially over fatness; also loss of lean mass, particularly muscle)</td>
<td>Food of low energy density and high nutrient density</td>
</tr>
<tr>
<td>Phytochemical deficiency disorders including menopause, macular degeneration, osteopenia</td>
<td>Greater emphases on plant-derived foods and their variety</td>
</tr>
<tr>
<td>Diseases of changing demography Ageing</td>
<td>Anti-ageing food, especially ones to delay body compositional change (bone, muscle and fat); loss of sensory function; decline in immune function; proneness to neoplastic disease; decline in cardio-respiratory function; and decline in cognitive function; and anti-inflammatory foods</td>
</tr>
<tr>
<td>Rapid loss of traditional food culture and Acquisition of new food cultures</td>
<td>Maintenance of traditional foods in convenient, affordable and recognizable form</td>
</tr>
<tr>
<td>New psycho-social stressors and mood change</td>
<td>Food that favourably affects mood</td>
</tr>
<tr>
<td>Food borne illness and the microbiological safety of foods</td>
<td>Pre- and pro-biotic foods. Immune system enhancing foods</td>
</tr>
<tr>
<td>Illness related to the chemical safety of foods (e.g., pesticide residues)</td>
<td>Regional origin and certification of foods</td>
</tr>
</tbody>
</table>

PEM, protein-energy malnutrition.

Table 2. An approach to the development of novel foods to minimize risk

1. Consider the health outcome in question.
2. Select a plant food or foods that confer these characteristics, preferably with an established food cultural base.
3. Formulate a food for trial.
4. Carry out a risk evaluation.
5. Conduct a food trial using biomarkers and/or health outcomes.
6. Develop an appropriate monitoring and surveillance strategy.
7. Seek regulatory approach as novel food for safety.
8. Formulate a food-based educational and informational framework, with or without health claims (depending on regulatory regime).
9. In all cases, consider affordability and encourage sustainability