Naturals in food: facts, myths, perceptions

In the first of a two-part article, scientists Martin Rose, Taichi Inui, Moira Dean and Jane Parker examine the true meaning of the term ‘natural’ within the food sector, and examines whether or not it’s always a safer, more nutritious choice.

A S CONSUMERS we expect and demand that the food we consume should be safe and of good quality, but our perception of ‘safe’ and ‘quality’ is personal, and constantly evolving. Increasingly, the consumer is seeking organic produce, fewer food ingredients and additives (particularly in Europe with the removal of E numbers), proof of authenticity and provenance and, in particular, natural and sustainable ingredients. But what does ‘natural’ mean, and is ‘natural’ always better; ie, safer, more wholesome and more nutritious? Are there times when transparency is compromised in order to be able to describe food as natural?

What is a ‘natural’ ingredient?
The term ‘natural’ is defined as ‘existing in an derived from nature; not made or caused by humans’; or ‘having had a minimum of processing or preservative treatment’. An image is conjured up in the mind of the consumer of green fields, the open rural environment, and often a sense of healthier and perhaps safer products.

The term ‘synthetic’, on the other hand, is defined as “made by chemical synthesis, to imitate a natural product” or “not genuine; imitative”, and conjures up images of industrial chemical synthesis in an urban environment and an inferior product.

The distinction between these may be clear in the mind of the consumer, and is clear in terms of chemistry when considering clothing materials, for example, where natural (cotton) and synthetic (nylon) are quite distinctly different in their chemical make-up. However, the distinction is blurred when it comes to food, as in many cases the natural and the synthetic versions are identical chemically. In terms of perception of ‘safe’ and ‘quality’ is being safe and of good quality, but our perception of the term ‘natural’ depends on your viewpoint – whether as consumers, as food regulators or as food chemists.

In the USA, the most frequent definition of natural is ‘nothing added, nothing removed’ and, more specifically, ‘nothing artificial added’. In the EU, the term ‘natural’ is defined by the RSC on food chemical risk assessment and food control. He is a member of the RSC Food and Toxicology Group Committees.

Below: Vanillin that has been synthesised from petrochemical precursors needs to be labeled differently to the identical molecule that has been extracted from Vanilla planifolia

It is clear that the definition of ‘natural’ depends on your viewpoint – whether as consumers, as food regulators or as food chemists.

Consumer perception and consumer choice – heuristics

So how does the consumer develop their perception of natural, and how does this influence their purchase intent? All consumers (including regulators and food chemists) use heuristics to select at least some of their grocery products. The term heuristic refers to any approach to problem solving, learning, or discovery that employs a practical method, not guaranteed to be optimal, perfect, logical, or rational, but instead sufficient for reaching an immediate goal. Heuristics can be mental shortcuts that ease the cognitive load of making a decision. During food selection, for example in a supermarket, choice is not always based on logical or scientific reasoning. Rarely is there time to read every ingredient and make an analysis of whether or not purchases planned will result in a well-balanced, nutritious diet.

Instead, the consumer is guided heuristically by food packaging, appearance such as colour, and simple terms that may be written on the packaging such as ‘wholesome’, ‘nutritious’, ‘fresh’ and ‘natural’. But what do these terms actually mean?

The term ‘natural’ is variously used and misused by sections of the food industry on labels and in advertisements. In a survey conducted in the USA, consumers were asked which of a list of foods and ingredients were ‘natural’. More than 60 per cent answered that corn and soya bean were natural, even though in the USA 92 percent and 94 percent of these products are genetically modified! Different flours (pea, wheat, sorghum) gave rise to different responses, possibly due to lack of familiarity. Products described by their chemical names were generally not considered natural, even when derived from natural sources.

In contrast to the situation in Europe, the term ‘natural’ has no legal definition within the USA so consumers from the EU and the USA have a different perception of the term ‘natural’. These different perspectives were discussed by Rosin et al (2012). In the USA, the most frequent definition of natural...
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