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Irish consumer acceptance of a hypothetical second-generation GM yogurt product

Elaine O'Connor [a], Cathal Cowan [a,*], Gwilym Williams [b,1], John O'Connell [c], Maurice P. Boland [d]

[a] Teagasc, The National Food Centre, Ashtown, Dublin 15, Ireland
[b] National Agricultural and Veterinary Biotechnology Centre, University College Dublin, Belfield, Dublin 4, Ireland
[c] Department of Agribusiness, Extension and Rural Development, University College Dublin, Belfield, Dublin 4, Ireland
[d] Department of Animal Science, University College Dublin, Belfield, Dublin 4, Ireland

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Abstract

This paper examines Irish consumer acceptance of second-generation GM products, defined here as those which are expected to exhibit a specific consumer-oriented benefit. Conjoint analysis was used to determine Irish consumer preferences ($n = 297$) for attributes of a hypothetical GM yogurt. Cluster analysis on the basis of the GM attribute revealed four segments of consumers. An "anti-GM" segment (24.4% of sample) were outright rejecters of all GM foods, while a second cluster (33.4%) specifically rejected second-generation GM products. A further 20.5% of the sample were receptive to the notion of second-generation GM products. However, this group had a number of complex reservations, which would need to be resolved before they would truly accept such products. GM foods offering specific consumer benefits were found to be acceptable to 21.2% of the sample, implying that these foods could represent a segment within the overall food market in the future.

Keywords: Consumer attitudes; Second-generation GM foods; Conjoint analysis

1. Introduction

Previous research has demonstrated that knowledge and awareness of biotechnology among Irish consumers is low. In addition, the Irish public distinguishes between different biotechnology applications, with medical uses generally perceived more favourably than food biotech innovation. Their primary concerns appear to stem from the unknown long-term effects of GM foods on the environment and human health (O'Connor, 2004). While previous research has been a source of much valuable information on Irish consumer reaction to biotechnology, the focus has been on genetic engineering as a somewhat abstract concept, and so has not examined consumer reactions to specific products of the technology, a situation reminiscent of that in the United Kingdom in the early nineties (Frewer, Howard, & Shepherd, 1996). A further criticism of previous work, which was survey based, is that it encouraged participants to reply in the role of citizen rather than consumer; in this role, the subjects may use information or beliefs in reacting to the survey that they would not use when making actual purchase decisions (Noussair, Robin, & Ruffieux, 2001a). In contrast, international studies have attempted to place respondents in the role of consumers, by presenting a survey audience with specific examples of GM foods and examining their intention to purchase such products (Frewer et al., 1996; Grunert et al.,

* Corresponding author. Tel.: +353 1 8059583; fax: +353 1 8059550.
E-mail address: ccowan@nfc.teagasc.ie (C. Cowan).
[1] Current address: Enterprise Ireland, Glasnevin, Dublin 8.

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2001; Koivisto Hursti, Magnusson, & Algers, 2002; Moon & Balasubramanian, 2001; Noussair, Robin, & Ruffieux, 2001b).

The work described in this communication adopted the approach of trying to place respondents in the role of consumers by presenting them with a hypothetical GM product example—a yogurt possessing anti-cancer properties. It has been predicted that the next wave or "second-generation" of biotechnology products to be launched on the market will be foods which are modified to meet the needs of the consumer, such as foods with altered nutritional qualities (USDA, 2001). Indeed, lack of perceived usefulness to the end-user has been considered by some authors to be the "Achilles heel" of the "first-generation" of GM food products (Gaskell, 2000). "First-generation" GM foods refers to those products derived from plants which have been genetically altered in order to impart agronomic traits such as resistance to insects or pesticides (Veeman, 2001). As a result, the first available GM foods have been perceived by many consumers as being of benefit to industry rather than the consumer (Frewer, 1999). Gaskell (2000) maintains that the absence of apparent consumer benefits from GM foods may even accentuate perceived risks and moral concerns.

In contrast, where people perceive biotechnologies to have substantial benefits, for example in health care, they appear to be willing to tolerate the risks. Correspondingly, a number of studies illustrate that consumers may be more receptive to GM foods where there are tangible consumer benefits associated with the individual products (Frewer et al., 1996; Frewer, Howard, Hedderley, & Shepherd, 1997; Hamstra & Smink, 1996), for example, where these foods are more nutritious or offer specific health-oriented benefits (Burton & Pearse, 2002; Frewer et al., 1996, 1997; Lähteenmäki et al., 2002; Verdurme, Gellynck, & Viaene, 2001; West, Gendron, Larue, & Lambert, 2001 among others).

Therefore, in this study, the hypothetical GM yogurt claimed to "help protect against cancer as part of a healthy diet", due to the presence of a GM ingredient. An anti-cancer health claim might be considered to be the ultimate health claim that a product can make, and in this context, provided a "best case scenario" to test Irish public reaction to GM foods.

The first objective of this research was to identify segments of consumers on the basis of acceptance/rejection of "second-generation" GM foods. The second objective was to profile these segments, and to identify any significant differences on the basis of demographics, food choice attitudes and behaviour variables.

2. Theoretical and methodological approach

Recent studies on consumer acceptability of GM foods have become more quantitative in nature, attempting to model the purchasing decision process for such products. Contingent valuation, choice modelling and conjoint analysis are examples of some of the more popular techniques that have been adopted. The conjoint analysis technique was used in the present study.

3. Materials and methods

3.1. Questionnaire design

A consumer questionnaire was designed which incorporated a conjoint analysis section to investigate consumer reaction to the GM yogurt. The questionnaire was also designed to generate a demographic and behaviour-attitude profile of Irish consumers (including whether the interviewee was the person mainly responsible for purchasing food, and also exploring the propensity to purchase a number of genetically modified food types).

The Food Choice Questionnaire (FCQ), developed by Steptoe, Pollard, and Wardle (1995), is a multidimensional measure of motives related to food choice and comprises 36 items that provide a means of simultaneously examining the importance of nine factors thought to be important in food choice (health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity and ethical concern). Lindeman and Väänänen (2000) subsequently developed three complementary scales to the FCQ, which attempt to address ethical motives (ecological welfare, political values and religion) and to place these in the context of overall food choice motives. Both the FCQ and the complementary scales were used in the current study.

3.2. Conjoint analysis

Central to the conjoint analysis model are four assumptions as outlined by Ness and Gerhardy (1994):

- Products can be defined as a set of attributes.
- Alternative versions of the same product can be defined as a set of different attribute levels.
- Consumers evaluate the utility of attribute level combinations when making a purchase decision.
- When consumers choose between alternative products, they "trade off" attribute level combinations.

Utility is the conceptual basis for measuring value in conjoint analysis and this is a subjective judgement of preference unique to each individual (Hair, Anderson, Tatham, & Black, 1998). The aim of conjoint analysis is to identify attribute combinations that confer the highest utility to the consumer, and to establish the relative importance of attributes in terms of their contribution to total utility (Ness & Gerhardy, 1994).