



'Would you eat cultured meat?': Consumers' reactions and attitude formation in Belgium, Portugal and the United Kingdom



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ABSTRACT

Cultured meat has evolved from an idea and concept into a reality with the August 2013 cultured hamburger tasting in London. Still, how consumers conceive cultured meat is largely an open question. This study addresses consumers' reactions and attitude formation towards cultured meat through analyzing focus group discussions and online deliberations with 179 meat consumers from Belgium, Portugal and the United Kingdom. Initial reactions when learning about cultured meat were underpinned by feelings of disgust and considerations of unnaturalness. Consumers saw few direct personal benefits but they were more open to perceiving global societal benefits relating to the environment and global food security. Both personal and societal risks were framed in terms of uncertainties about safety and health, and possible adverse societal consequences dealing with loss of farming and eating traditions and rural livelihoods. Further reflection pertained to skepticism about 'the inevitable' scientific progress, concern about risk governance and control, and need for regulation and proper labeling.

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1. Introduction

Meat production and consumption are highly topical but also increasingly controversial consumer issues nowadays. Many consumers in Western countries may already have changed their meat consumption habits during the last decade, or may still intend doing so in the near future (Verbeke, Pérez-Cueto, de Barcellos, Krystallis & Grunert, 2010; Vanhonacker, Van Loo, Gellynck & Verbeke, 2013). Possible reasons are the consecutive meat safety crises since the mid-nineties (Verbeke, Pérez-Cueto, de Barcellos, Krystallis & Grunert, 2010) followed by the more recent debates about the health (McAfee et al., 2010; Pan et al., 2012) and sustainability (Aston, Smith & Powles, 2012; Austgulen, 2014) consequences of meat production and consumption. In addition, variability of meat quality in general and palatability in particular may have led to consumer dissatisfaction and a gradual shift away from traditional muscle-type meat (Verbeke et al., 2010; Hocquette et al., 2014). While a number of meat substitutes have been

developed, such as products based on soy protein (with varieties including tofu and seitan) and Quorn®, many non-vegetarian consumers tend to avoid such products because they are insufficiently perceived as 'resembling meat' or as providing the same sensory experience as real meat (Hoek et al., 2011). At the same time, the tendency towards lower per capita meat intake in Western countries is forecast to be largely outweighed by an increased demand for animal products and meat in developing countries (Steinfeld et al., 2006). Global trends and the related challenges in terms of feeding and satisfying the growing and increasingly demanding world population have fuelled the search for novel protein sources as possible substitutes for traditional meat.

One of the most intriguing recent examples of novel proteins is meat cultured from stem cells (Post, 2012). Commonly used names for the resulting product, which became a reality with the August 2013 burger-tasting in London, are 'synthetic', 'cultured' (the term used in this paper), 'in vitro', 'artificial', 'laboratory-grown' or 'factory-grown' meat. Hocquette et al. (2013) reviewed the potential of cultured meat relative to traditionally produced meat and identified technical, economic and social constraints, including an uncertain acceptance by consumers, as major limitations. Similarly, Mattick and Allenby (2012)

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have discussed the implications of a potential shift from traditional to cultured meat, while Goodwin and Shoulders (2013) have analyzed print media coverage of cultured meat, revealing that between 2005 and 2011 cultured meat has been discussed in terms of benefits, history, process, time, livestock production problems, and skepticism, but mostly by sources qualified as proponents of cultured meat. Post (2014), the leading scientist behind the recent development of cultured meat, has outlined the technological challenges ahead for cultured meat, and has also pointed out that public perceptions and consumer reactions remain largely unknown and uninvestigated.

Several recent examples of novel agro-food technologies, such as biotechnology and nanotechnology have illustrated that European consumers may not embrace food technologies as enthusiastically as hoped for at the time when the technologies were developed and adopted (Verbeke, 2011). Furthermore, the importance of involving the public and consumers early in the development process has been stressed as a determinant of future technology acceptance (Frewer et al., 2011) and successful food product development (Grunert, Verbeke, Kügler, Saeed, & Scholderer, 2011). This holds in particular for the meat sector where “new product development is a major competitive parameter [...] for producers competing on a mature and developed market”, and where besides the fact that most new products fail on the market, “differentiated new products adapted to the needs of specific customer segments might give protection against price competition, replace products that face declining sales at the end of their lifecycles, and can contribute to creating customer satisfaction and loyalty” (Grunert et al., 2011, p. 251). Hence, consumer insight is crucial for those directly involved in the development of cultured meat (products) as well as for the larger group of those expected to face competition from this novel product in the future.

Thus far very few studies have focused on consumer reactions and their likelihood of accepting or rejecting (the idea of eating) cultured meat. A survey conducted in the Netherlands in February 2013 with a representative sample of 1296 participants indicated that 79% had never heard of cultured meat, while 14% had heard of it and claimed to know what it is about (Flycatcher, 2013). After explaining the technique and its possible advantages and disadvantages, 63% supported the idea of producing cultured meat and 52% claimed to be willing to try cultured meat. An Internet poll organized by The Guardian in the United Kingdom (UK) right after the public unveiling of the cultured hamburger in August 2013 revealed that two thirds of the UK participants expressed interest to try cultured meat (The Guardian, 2013).

A few recent consumer studies set out to delve deeper into the possible reactions, objections, motives and perceived barriers of consumers in relation to the concept of cultured meat. Hopkins and Dacey's (2008) overview of potential objections to cultured meat included worry about unknown dangers or applications of the technology beyond culturing animal cell tissue for human consumption, lack of 'realness' and naturalness, disgust at the idea of eating cultured meat, alongside moral objections related to the technology and its application. Verbeke, Sans, and Van Loo (in press) have addressed the possible criteria that can be expected to shape consumer acceptance or rejection of cultured meat and the possible consumer concerns that may arise when facing this new technology and novel food product. Their study conducted with Belgian consumers largely corroborates the results of the previously mentioned polls in the Netherlands and the UK in that only a minority of consumers rejected outright the idea of trying cultured meat. Their study suggests that the majority of consumers have hesitant attitudes (selecting 'maybe') when asked whether they would be willing to try cultured meat in the future. The fact that many consumers hesitate between expressing either acceptance or rejection of cultured meat encourages the search for a better understanding of how consumers make sense of this new technology and its end products.

Therefore, given the paucity of evidence around consumer acceptance or rejection of cultured meat, this study investigates consumers' reactions to the concept of cultured meat in several European countries prior to the

first public unveiling of the cultured meat burger in August 2013. Drawing on social representations theory, the study first analyzed how the public make sense of 'synthetic meat' and how people might transform scientific concepts like 'culturing meat from muscle stem cells' into common-sense (Marcu, Gaspar, Rutsaert, Seibt, Fletcher, Verbeke, & Barnett, 2014). This analysis revealed that people use different sense-making strategies to discuss cultured meat: among others, people ask questions, wonder about the societal implications, anchor cultured meat to more familiar objects (like biotechnologies), use metaphors (mostly borrowed from science-fiction) and consider how cultured meat might eventually lead to a change in meat consumption practices. The analysis presented in the present paper delves deeper into the content of the participants' reactions and their attitudes towards cultured meat.

2. Materials and methods

2.1. Overall study framework and design

This study focuses on the affective and cognitive components of attitudes to articulate consumers' feelings, beliefs, and predispositions as either favorable or unfavorable towards the concept of cultured meat. The affective component, i.e. consumers' feelings and emotional reactions to an object (Batra & Kazmi, 2008), may be one of like or dislike without a specific cognitive basis for these feelings (Zajonc, 1980), as seen for example in the case of Westerner consumers' aversion towards the eating of insects as an alternative source of protein (Looy, Dunkel & Wood, 2014; Verbeke, 2015). Initial reactions may be followed by more cognitive processes including the formation of beliefs through connecting an object, its attributes, the possible benefits and risks it entails, and finally, further reflections about the wider context in which the object presents itself. This basic attitude formation outline (Fig. 1) is used as the framework for structuring, presenting and discussing the consumers' reactions to the concept of cultured meat, and in turn to explore how cultured meat, as a product, may be accepted or rejected in the future. Our research questions were: would consumers express acceptance or rejection of cultured meat? Would their attitudes towards cultured meat be underpinned mostly by affective or by cognitive reactions? And what beliefs might drive their acceptance or rejection? Each of these issues is explored in turn.

Consumer views on cultured meat were elicited in two separate but related studies, which were both run in Belgium, Portugal, and the UK as part of the EU FP7-funded research project FoodRisC. One study consisted of exploratory focus group discussions, while the other study was online and involved the use of a web-based deliberation tool, VIZZATA™, which had been developed to provide an online environment where participants could engage in an asynchronous dialogue with the research team (Barnett et al., 2008). The online tool presented the participants with pieces of information, termed content testers, which consisted of images, text, and a video. The participants were prompted online to leave questions and comments in relation to the study material, and could indicate to which of these they wanted responses from the research team (see Marcu et al., 2014, for further description of the VIZZATA™ tool). The stimulus material in both the online and focus group studies consisted of the same seven content testers pertaining to various possible risks and benefits of red meat. While in the online study, the content testers were presented sequentially on screen, in the focus groups, the content testers were printed out on separate sheets of paper which the participants were asked to read one at a time. One of these content testers was a two-minute long YouTube video on cultured meat (Appendix A). This video was presented in English in all three countries, both in the online study and in the focus groups (in the latter, with the help of a video projector and loud speakers). The video, entitled 'Would you eat synthetic meat?', had been produced by the Royal Institution of Australia as part of the series 'Three technologies which may change the way we live'. The Belgian and Portuguese focus groups and online participants were sufficiently

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