



If you build it, will they eat it? Consumer preferences for plant-based and cultured meat burgers

Peter Slade

Department of Agricultural and Resource Economics, University of Saskatchewan, 51 Campus Dr., Saskatoon, S7N 5A8, SK, Canada

ARTICLE INFO

Article history:

Received 19 November 2017

Received in revised form

31 January 2018

Accepted 24 February 2018

Keywords:

Meat substitutes

Cultured meat

Plant protein

ABSTRACT

In a hypothetical choice experiment consumers were given the option of purchasing burgers that were made from beef, plant-based protein, or cultured meat. Willingness to purchase plant-based and cultured meat burgers is linked to age, sex, views of other food technologies, and attitudes towards the environment and agriculture. Although consumers were told that all burgers tasted the same, there was a marked preference for beef burgers. A mixed-logit model predicts that, if prices were equal, 65% of consumers would purchase the beef burger, 21% would purchase the plant-based burger, 11% would purchase the cultured meat burger, and 4% would make no purchase. Preferences for plant-based and cultured meat burgers are found to be highly, but not perfectly, correlated.

© 2018 Published by Elsevier Ltd.

1. Introduction

In recent years, alternatives to farm-grown meat have received considerable attention within academia and the popular press. While meat alternatives were once a niche product aimed at vegetarians, they are increasingly targeted to omnivores. Proponents view meat alternatives as a means of reducing livestock production, which is one of the largest industrial users of water and land, and a significant source of greenhouse gas emissions (Fiala, 2008; Pimentel & Pimentel, 2003; Steinfeld, Gerber, Wassenaar, Castel, & de Haan, 2006). The nature and size of the market for meat alternatives is an important question for academics, food marketers, and policymakers, as they consider the research and development, and marketing of these products.

This article examines consumers' willingness to adopt two alternatives to farm-grown meat: plant-based protein and cultured meat – I shall refer to these two products, collectively, as simulated meat. Simulated meat aims to emulate the taste and texture of meat, creating an essentially identical substitute. Although some researchers have speculated that simulated meat can greatly reduce livestock consumption (Bhat, Kumar, and Bhat, 2017; Alexander et al., 2017), it is unclear whether consumers would adopt simulated meat even if taste were equivalent. For some, meat consumption is a philosophical choice, closely tied to their sense of identity (Rothgerber, 2014). For others, simulated meat is unnatural

or disgusting (Verbeke et al., 2015).

This study makes three primary contributions to the literature. The first is to analyze the demographic and attitudinal factors that explain preferences for simulated meat. The second is to estimate the size of the market for cultured meat and plant-based burgers. The third is to measure the extent to which preferences for different types of synthetic meat are correlated. To address these research questions I use a hypothetical choice experiment in which respondents were given the option of purchasing burgers made from beef, plant-based protein, or cultured meat. Importantly, respondents were told that the three types of burgers (beef, plant-based, and cultured meat) tasted the same and had similar nutritional profiles.

1.1. Simulated meat

As their name suggests, plant-based burgers are made from processed plant ingredients. There are numerous plant-based burgers currently on the market. While some of these burgers make no attempt to mimic the taste of meat, there is a culinary race to create a plant-based burger that is indistinguishable from beef. One example is the *Impossible Burger*, whose key ingredient is heme, an iron-rich molecule found in blood.¹ Another is the *Beyond Burger*, which is made from pea protein and beets, giving the impression of bleeding.²

¹ See <https://www.impossiblefoods.com/burger>.

² See <http://beyondmeat.com/products/view/beyond-burger>.

E-mail address: peter.slade@usask.ca.

Cultured meat burgers are composed of muscle tissue that is grown from initial cell cultures in a laboratory. Post (2012) discusses various methods that can be used to grow cultured meat. While cultured meat is yet to be commercialized, it is under development in several private and public research laboratories, and a cultured meat burger has been submitted to a public taste test (Fountain, 2014). Environmental life cycle analyses find that cultured meat will have dramatically lower greenhouse gas emissions relative to farm-grown beef or poultry (Mattick, Landis, and Allenby, 2015; Tuomisto and Teixeira de Mattos, 2011).

1.2. Demand for simulated meat

There has been a substantial amount of research investigating consumers' willingness to reduce their meat consumption. de Boer, Schösler, and Aiking (2014) find that a substantial part of the population are open to consuming one less meal containing meat per week – only 23% of respondents said they certainly would not. de Boer and Aiking (2011) show that younger, more educated, and female consumers are generally more willing to reduce their meat consumption. Schösler, de Boer, and Boersema (2012) focus on the types of non-meat dishes that omnivores would be receptive to. They find dishes that are viewed as normal (i.e. omelettes, vegetable pasta, and stir-fry) are generally preferred to dishes that are perceived as exotic (i.e. dishes with visible insects or snacks made from tofu). It is unclear how these preferences would map to simulated meat burgers. On the one hand, these burgers are similar to beef burgers in appearance. On the other hand, the production processes are novel, and cultured meat, in particular, may suffer from a “yuck” factor (Van der Weele & Driessen, 2013).

A handful of recent papers have analyzed consumer attitudes regarding cultured meat. Bekker, Fischer, Tobi, and van Trijp (2017) find that consumers have generally positive attitudes towards cultured meat, and demonstrate that these attitudes are affected by positive and negative information,³ suggesting that preferences for cultured meat are not yet fixed. Verbeke, Sans, and Van Loo (2015) ask respondents if they would try cultured meat: 24% of respondents said they “surely” would try cultured meat, and 67% said they might try it. When given additional positive information, the percentage who said they would surely try cultured meat increased to 51%.

Conversely, Hocquette et al. (2015) are less sanguine about the market for cultured meat, finding that most educated consumers are skeptical of the product. Verbeke, Marcu, et al. (2015) and Verbeke, Sans, et al. (2015) perform a qualitative analysis of consumer attitudes towards cultured meat in Belgium, Portugal, and the United Kingdom with similarly pessimistic conclusions. Their focus group respondents often reacted to cultured meat with disgust, deeming it unnatural, and believing that it carried risks similar to other novel food technologies such as genetic modification and animal cloning. Some did see benefits to the technology, such as a reduction in world hunger, but these benefits were thought of as more abstract.

One of the aims of this paper is to provide more clarity regarding the potential market for cultured meat by using a hypothetical choice situation to gauge consumer demand. Further, unlike previous work I examine the covariates that explain consumers' preferences for cultured meat.

There is a larger body of work examining consumer attitudes towards plant-based meat substitutes. Most studies find that taste

and similitude to meat are the most important factors in the adoption of meat substitutes. In a survey, Hoek et al. (2011) find that individuals prefer meat substitutes that are close approximations of meat, in terms of taste, texture, appearance, and smell. Using a taste test, Elzerman, Hoek, van Boekel, and Luning (2011) find that plant-based meat substitutes are considered to be more “appropriate” when they look similar to the meat they are replacing.

Hoek et al. (2013) point out that preferences for meat substitutes are not constant. They conduct an experiment in which subjects were given meals containing either meat or meat substitutes. Participants ate these meals twice a week for ten weeks. Initially, subjects rated the meat products as tastier than the meat substitutes; however, after ten weeks the ratings were not statistically different.

Taste is, however, only one dimension of the decision to purchase meat substitutes. Food decisions are not solely a function of sensory perceptions, but are also grounded in an individual's cultural and individual identity (Fischler, 1988; Bisogni, Connors, Devine, & Sobal, 2002; Mennell, Murcott, and Van Otterloo, 1992). Culturally, meat occupies a central role in Western diets and is often considered to be a structural part of a meal: many individuals describe their meals as being “meat and potatoes” or “meat and two vegetables” (Marshall & Anderson, 2002; Brown & Miller, 2002; Bove, Sobal, and Rauschenbach, 2003). Meat eating is, therefore, perceived as conventional, whereas vegetarianism, and to a lesser extent consuming simulated meat, may mark an individual as “other” or “different” (de Boer, Schösler, and Aiking, 2017; Graça, Calheiros, and Oliveira, 2015; Pohjolainen, Vinnari, and Jokinen, 2015).

The contribution of meat eating to an individual's identity is quite heterogeneous. For some, meat eating is central to their sense of self. Bisogni et al. (2002) find that certain individuals define themselves as a “meat and potatoes” person or as a “normal” food eater. This is particularly true for men, who are more likely to view meat as a necessary requirement for a “real” meal (Rothgerber, 2013; Sobal, 2005). Kubberød, Ueland, Rødbotten, Westad, and Risvik (2002) document that men prefer meaty flavours and exhibit greater support for pro-red meat statements.

Rothgerber (2014) suggests that omnivores use various strategies to relieve their dissonance about meat consumption. Some of these strategies emphasize religious and moral arguments in favour of eating meat – these arguments may become internalized and intertwined with other values. For example, there is a strong link between meat eating and conservative political ideology (Ruby, 2012).

Furthermore, many omnivores link meat substitutes to vegetarianism, which generally connotes femininity, earthiness, and a liberal ideology (Minson & Monin, 2012; Ruby & Heine, 2011; Sadalla & Burroughs, 1981). Although vegetarians are often considered to be morally superior (Dietz, Frisch, Kalof, Stern, & Guagnano, 1995; Ruby & Heine, 2011), many omnivores maintain hostile attitudes towards vegetarians, finding them to be moralistic, self-righteous, and radical (Greenebaum, 2012; Minson & Monin, 2012). Individuals who do not share the stereotypical political values or personality traits of vegetarians may prefer not to eat synthetic meat in order to dissociate themselves from these cultural and individual markers.

Other omnivores are more conflicted about their meat eating, and may be receptive to the option of eating synthetic meat. Several authors have noted the dissonance that arises in individuals who both love and eat animals (Douglas, 1979; Bastian & Loughnan, 2016; Bratanova, Loughnan, and Bastian, 2011; Tian, Hilton, and Becker, 2016). Some individuals have resolved these internal conflicts by adopting diets that reduce meat consumption, while stopping short of eliminating meat altogether. These diets include

³ Interestingly, Bekker et al. (2017) also show that providing positive or negative information about an unrelated environmentally friendly technology – solar panels – also affects attitudes towards cultured meat.

Download English Version:

<https://daneshyari.com/en/article/7305865>

Download Persian Version:

<https://daneshyari.com/article/7305865>

[Daneshyari.com](https://daneshyari.com)