Early Adopters or Forever Resisters? Singapore Veg*ns' Views Toward Alternative Protein Foods

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Alternative protein foods, which provide significant quantities of protein but do not use conventional animal sources, can be an important component of sustainable diets. This paper presents the results of an autoethnographic study by an activist reflecting on their efforts to move people in Singapore closer to animal-free diets, with an emphasis on present and future consumption of alternative protein foods. The findings suggest that the majority of Singapore veg*ns are not early adopters of such foods and may resist consuming them in the future. Reasons for this resistance include the perception that such foods are unnecessary, do not support spiritual needs, are not part of healthy lifestyles, are produced by companies driven by self-interest, and are not seen as a tool for promoting veg*nism. Implications are discussed in light of recent advances in understanding how to effect change.

Keywords: Alternative Protein Foods; Early Adopters; Future Foods; Singapore; Sustainable Diets

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INTRODUCTION

Solutions to the climate crisis include changes in diet to what have been termed sustainable diets (Beverland, 2014; Canseco-Lopez & Miralles, 2023). Sustainable diets for humans and their companion animals (Knight, 2023) emphasize foods that exclude ingredients derived from conventionally raised nonhuman animals. Such sustainable diets can include traditional foods, such as fruits, vegetables, grains, beans, nuts, and seeds, as well as novel foods that have been recently developed through technological innovations. Some of these foods, both traditional and novel, are especially rich in protein, a key nutrient for humans (Malila et al., 2024).

Terms differ when describing the foods included in sustainable diets. The following definitions are used in the current article. "Vegetarian" is defined by the absence of foods from slaughtered animals (Victoria State Government, 2023).

"Vegan" extends this to exclude foods, such as eggs and dairy, taken from animals without immediately killing them (Victoria State Government, 2023). The term "veg*n" is sometimes used to encompass both groups, and vegans can be considered a type of vegetarian. "Plant-based" refers to foods from plants and may also include fungi, such as mushrooms (Ostfeld, 2017, p. 315).

Veg*ns may also differ according to their motivation for their diets (Fox & Ward, 2008). Ethical veg*s are motivated by their concern for the animals trapped in the factory farming process (Braunsberger & Flamm, 2019). Health-conscious veg*ns seek to avoid the high cholesterol, high blood pressure, lack of fiber, and other harms associated with meat-based diets (Cramer et al., 2017). Last but not least, some people opt for veg*n diets as a way of lessening their carbon footprints (Chai et al., 2019).

"Alternative protein" is another term frequently discussed in the context of sustainable diets (Sexton, 2019, p. 47). Alternative protein involves foods that people eat instead of those taken from animals forced to live in Confined Animal Feeding Operations (CAFOs), less decoratively known as factory farms. While many traditional foods, such as legumes and grains, provide sufficient protein (Chen et al., 2020; Huang et al., 2020; Katz et al., 2020), not to mention providing antioxidants, fiber, and other nutrition necessities (Greger, 2018), media attention has focused on what have also been called "future foods," sometimes called "novel foods" or "smart foods" (Bhat, 2022). These include foods made from fungi, fermentation, seaweed, insects, cell cultivation, and upcycling of waste food (for example, using waste from tofu production to make chips; see Feng et al., 2021).

This study examines how veg*ns in Singapore perceive alternative protein foods and the factors that shape their views. Specifically, it addresses the following research questions: What are Singapore veg*n's views on alternative protein foods? What factors might impact those views? To contextualize these questions, the following section provides an overview of veg*n food trends both globally and within Singapore before presenting the study's findings.

BACKGROUND ON VEG*NISM AROUND THE WORLD

Data on the number of vegetarians and vegans worldwide are difficult to obtain for at least two reasons. First, data are not collected in many countries, and when they are collected, they are typically gathered through individuals self-identifying as vegan or vegetarian (Vegetarian Resource Group, 2022). Available data suggest that India has the largest number of vegetarians, with at least 29.5% of the population identifying as vegetarian and 9% as vegan (World Population Review, 2024). Vegetarian Resource Group, with a more rigorous data collection protocol but data only for the U.S., reported that in 2020 in the U.S., 6% of the population were vegetarian and 3% were vegan (Vegetarian Resource Group, 2024).

Bentham et al. (2020) found that, except for Sub-Saharan Africa, most of the world has experienced a significant increase in the quantity and variety of its food supply since the 1960s. This increase included both more meat and more vegetables, thereby making it easier for omnivores and veg*ns. Greater internationalization of food has increased the availability of veg*n-friendly cuisines, such as Italian, Japanese, Middle Eastern, and Mexican (Ozbun, 2024). Moreover, the internet has

greatly increased access to information on the benefits of adopting veg*n diets and the locations of eateries with veg*n offerings.

BACKGROUND ON SINGAPORE AND VEG*N FOODS IN SINGAPORE

The present study was conducted in Singapore, a country with a population of 5.6 million, of whom 4.1 million are classified as residents, that is, citizens or permanent residents (Singapore Department of Statistics, 2024). Of these 4.1 million people, approximately 74% identify as Chinese, 14% as Malay, 9% as Indian, and 3% as other races (Statista, n.d.). One estimate placed the percentage of vegetarians in Singapore at 7% (World Population Review, 2024), although the methodology supporting this estimate was not explained. The rigorous methodology employed by Vegetarian Resource Group (2024) which asks respondents to list what they eat, rather than to label themselves, might have resulted in an estimate below 7%. Lok (2024) cited a 2023 Singapore government survey which reported that 5 % of Singapore consumers self-identify as veg*n, a decrease from 7 % three years earlier.

Food in Singapore reflects the diverse cultures of the people who migrated to the former British colony, which gained independence in 1965. Principal influences are from various Malay, Indian, and Chinese cultures, as well as fusion foods, such as those from Peranakan (a mix of Malay and Chinese) culture. While Malay food is not represented by any all-vegetarian restaurants, several Malay dishes, such as *mee rebus* and *sambal goreng,* easily lend themselves to plant-based versions. Given the prominence of vegetarianism in India, the presence of Indian vegetarian restaurants in Singapore is no surprise. The first, Ananda Bhavan, was founded in 1924 and remains in operation ("Ananda Bhavan", 2016). Tan (2022) traced Chinese vegetarian eateries in Singapore to the 1940s and credited Buddhist women from China as key founders:

> These women hailed from southeastern China and migrated to Singapore in the late 19th and early 20th centuries. They observed a strict vegetarian diet and spent much of their time in temples. … Most of these women belonged to a tradition of Mahayana Buddhism, with some practicising a syncretic form that combined Daoism and Confucianism. (paragraph 4)

METHODOLOGY

In an autoethnography, a person reflects on and tells stories about their experiences in a given political, social, or cultural setting (Cohen, 2011; Rostami et al., 2024). Autoethnography attempts to show "people in the process of figuring out what to do, how to live, and the meaning of their struggles" (Bochner & Ellis, 2006, cited in Adams et al., 2017, p. 1). In the case of the present report, the first author was trying to figure out their own views on alternative protein foods and how to influence fellow veg*ns to accept and promote such foods. By doing so and through observations, they also gained insights how Singaporean veg*ns view alternative protein foods and which factors might impact those views. The findings are based on the first author's recollections of interactions with fellow veg*ns. Utilizing memories as important data

links, this study is grounded in an important form of qualitative, feminist research known as memory work (Lapadat et al., 2010).

The first author became a vegetarian in 1980 while living in the U.S. They have lived in Singapore since 1993. However, they were not a part of any veg*n communities, in Singapore or anywhere else, until 2002, when they joined Vegetarian Society (Singapore) (VSS), now called the Centre for a Responsible Future. In VSS, they met vegans who gently encouraged a shift toward a vegan diet, which was completed by 2014.

From 2003 to 2018, the first author served as president of VSS, which overlapped with a few years when they were also president of the International Vegetarian Union. During that time, they helped coordinate many local and international education events, working closely and exchanging ideas with many other veg*n activists. They continue to participate in veg*n activism, although most of their energy is now devoted to the Kampung Senang Charity and Education Foundation, which promotes plant-based diets alongside its many other charitable efforts. While initially skeptical about alternative protein foods, as something they did not need, having survived just fine for many years without meat, they came to see alternative protein as something that added variety to their diet and, more importantly, as a tool to reduce animal suffering. Unlike in most qualitative studies, in this autoethnographic study, the first author did not take notes, collect artifacts, or record interviews with others. Instead, the first author relied entirely on their memories and the recollection of interactions (Lapadat et al., 2010). However, this approach is inherently subjective, and the reliability of the recollections may be influenced by personal biases or selective memory. To enhance reflexivity and mitigate bias, the second author served as a critical friend, that is, a trusted colleague who provides rigorous questions and constructive critiques (Costa & Kallick, 1993).

RESULTS AND DISCUSSION

This section of the article discuses responses to alternative protein foods that the first author encountered among Singapore veg*ns. Each response is then discussed. The overall response of the Singapore veg*ns sampled was one of resistance to such foods. Reasons included those given by the general Singapore public: higher price, lack of availability, and inferior taste. However, in this article, the focus lies on perspectives that may be unique to veg*ns.

Generally, alternative protein foods of all types face numerous and substantial obstacles in achieving the scale, price, taste, and other criteria necessary to helping humans make their diets more sustainable. Fortunately, reasons for optimism exist, including participation in alternative protein research and production by some of the world's largest food manufacturers (e.g., Nestlé, 2023), the world's largest fast food restaurants (e.g., Burger King; see Sozzi, 2020), and the world's largest meat producers (e.g., Tyson; see Ellis, 2021). Furthermore, technological advances in other areas, for example, cell culturing for medical purposes (Cardoso et al., 2023), benefit alternative foods development.

Alternative Protein Foods Are Not Necessary

Singapore has long had veg*n versions of popular meat dishes, including *ba kut teh* (an herbal soup containing pork, literally translated as pork rib tea), chicken rice (perhaps Singapore's signature dish, featuring boneless chicken, rice cooked in chicken stock, special chili, and cucumber or other vegetables), and *char siu* (roasted pork). Why pay more for slightly better versions? What is all the fuss about eating these supposedly novel foods? They are not new at all to Singapore veg*n cuisine, as veg*ns adopted them decades ago ("Plant-based meat has thrived", 2021).

Related to the view that alternative protein foods are unnecessary, a frequent response of veg*ns when asked if they want to try alternative protein foods is, "Why do I want to pretend to eat animals?" This is a highly subjective response, one that the first author never shared. Government inspections and product labeling confirm that although alternative protein foods may have the taste, mouthfeel, and other qualities of food from exploited animals, these foods contain no ingredients of animal origin. Thus, eating these foods does not contribute to the suffering of nonhuman animals. Alternative protein companies may want to take additional steps to make this clear in their product labeling.

Spiritual Reasons

Many Singapore veg*ns have expressed that they were at least partly motivated by spiritual reasons. For instance, some Buddhists may eat vegetarian on the first and 15th day of the lunar month, with some Hindus having other days set aside for meatless eating. Of course, spiritually motivated people may adopt veg*n diets on a more ongoing basis. Controversy surrounds this practice. For example, what was the stance of Buddha on eating meat? Does consumption of eggs, widespread at vegetarian stalls owned by Buddhists, run afoul of the Buddhist injunction against harming sentient beings? The first author is an atheist, although they are close to many religious people, including their spouse.

Some spiritually motivated veg*ns resist alternative protein food because they believe that consuming these products is akin to pretending to eat animals. For these individuals, intention and other forms of thought hold significant importance. On a more literal level, there are concerns regarding animal welfare in the production of cultivated meat. These concerns center around two issues (Yang et al., 2023). Fortunately, as research has advanced, both concerns are well on their way to being alleviated. First, can cells be obtained from animals in a minimally invasive manner? The hope is that these cells can then be used repeatedly, thus earning the name "immortal cells lines" (Guo et al., 2022). The second area of concern involves the medium in which the cells grow. The goal is to transition to alternatives that do not rely on animal-derived substances, such as fetal bovine growth serum (Flaibam et al., 2024). The first author is a techno-optimist who believes that technology will solve many seemingly intractable problems, but their examples of how technology has led to animal-friendly changes have fallen mainly on deaf ears (Danaher, 2022).

Health Concerns

The claim that alternative protein foods are "ultra-processed" was raised by many Singapore veg*ns, including a medical doctor. Perhaps, one cause of this concern lies in veg*nism's roots in advocacy of more natural ways of life, which lead veg*ns to reject industrial farming of animals. Such farming deprives the animals of access to natural behaviors. For example, chickens raised for consumption spend their entire lives indoors, cannot dust bathe or roost, and are completely separated from their families (Prisco, 2022). At the same time, the chickens are genetically modified and fed growth hormones and antibiotics. Additionally, CAFOs are significant sources of pollution and are often situated near low-income communities (Son & Bell, 2024).

Many veg*ns' rejection of anything unnatural extends beyond industrial farming of animals to the industrial production of all food. According to Mridul (2024), approximately 70% of foods in the U.K. and U.S. can be classified as ultra-high-processed. Some veg*ns are fine with that. A visit to Singapore's only vegan grocery store, Everyday Vegan, reveals a wide selection of vegan foods on the shelves, alongside a range of less processed and unprocessed options. Indeed, the term "junk food vegan" (Aavik & Velgan, 2021, p. 8) has been coined to refer to people whose rationale for choosing a vegan diet does not prioritize health benefits.

As noted earlier, whether food can be classified as processed, highly processed, or ultra-high processed is tricky. Yet many veg*ns observed in the present study did not seem to differentiate. However, such differentiation might change their perception of alternative protein foods. For instance, Mridul (2024) compared Beyond Meat patties (a plant-based alternative) with Oscar Meyer conventional wieners (a traditional meat-based product). The two products were both high in salt and protein, but the Beyond Meat products had no or less cholesterol, sugar, saturated fat, and calories and had more fiber. Chapman (2023) warned governments, the public, and other stakeholders that:

> The discourse [about processed foods] is approaching a point of hysteria, has become worryingly detached from nutrition science and is at odds with health and sustainability goals. Urgent and decisive action is needed to confidently quell fears and address misconceptions. (p. 7)

To the first author, veg*ns who raised the issue of processed foods were falling for a trick by supporters of the status quo, similar to groundless scare tactics used against soybeans (Vaughn, 2022), but repeated by many veg*ns. More needs to be done to clarify this for veg*ns and the general public.

Distrust of Leaders of the Alternative Protein Industry

Another reason some veg*ns may lack enthusiasm for alternative protein foods is due to negative attitudes toward those who could profit financially and gain fame should this industry thrive. Perhaps, these concerns arise from comparisons with those IT innovators, such as Mark Zuckerberg, who became rich and famous from the Internet. Originally, they were seen by many, including the authors, as visionaries building a

better world where everyone would be part of one community. That dream turned into a nightmare (Bilton, 2019), and the IT innovators morphed into villains in the eyes of much of the public. If many internet owners turned into 'ogres' who deceive the public and ruthlessly suppress competition, could perceptions of alternative protein companies and their owners follow the same path? The first author hopes not. However, just as the first author acknowledges the many advantages of companies like Google, despite their drawbacks, they remain optimistic that the pro-social benefits of alternative proteins' eventual success will outweigh their inevitable negatives.

Alternative Protein Foods as Activist Tools

Even though many veg*ns have little interest in alternative protein foods for themselves, if asked, they often say that such foods have a role to play as "transition foods" for meat eaters who cannot seem to give up their omnivorous diets, despite the growing evidence of the harms caused by conventional animal-based foods, including harm to human health (Ford et al., 2023).

Nevertheless, too many veg*ns seem to see people moving away from conventional animal-based foods as everyone's individual choice. For instance, when the first author suggested that veg*ns be early adopters (Catalini & Tucker, 2017; Henderson, 2023) who seek out, buy, post about, and otherwise promote alternative protein foods in order to speed these foods' role in moving humans away from conventional animal-based foods, little enthusiasm was exhibited. Veg*ns seemed unexcited by the possibility that buying alternative protein foods could be seen as a form of activism, creating a virtuous cycle where increased demand boosts supply, which in turn lowers prices, leading to even greater demand. The first author's decision to leave the leadership of CRF was in part due to disillusionment with the views of the members, and for a short time, the first author was involved in an unsuccessful startup that promoted alternative protein foods. As the multiple horrendous impacts of meat production become even more overwhelming, perhaps veg*ns will be more willing to take up alternative protein foods as a valuable tool for ameliorating these impacts.

CONCLUSION AND FUTURE RESEARCH

This autoethnographic study explored the views of vegans in Singapore toward alternative protein foods and the reasons behind those views. Results suggest that Singapore veg*ns are more likely to reject alternative protein foods. These foods are viewed as unnecessary, incompatible with spiritual goals, unhealthy, products of individuals motivated primarily by wealth and fame, and not useful for promoting veg*nism.

Future research may utilize other qualitative tools, such as interviews and observation, as well as creative methods like photo elicitation. Data could also be collected on actual eating habits, including variations in the consumption of alternative protein foods by different individuals. Future research may well explore the potential of targeted educational campaigns to address the concerns of Singapore veg*ns regarding alternative protein foods, particularly focusing on the health benefits, environmental impacts, and ethical considerations of these foods. Additionally, studies could investigate the role of cultural and spiritual beliefs in shaping dietary choices and

how these can be respectfully integrated into the promotion of alternative proteins. Longitudinal studies tracking the adoption rates of alternative protein foods among veg*ns and the general population could provide valuable insights into changing attitudes and the effectiveness of various outreach strategies. Finally, research could also examine the impact of policy interventions, such as subsidies for alternative protein products or public awareness campaigns, on the acceptance and consumption of these foods in Singapore and beyond.

The above notwithstanding, we remain optimistic that evidence supporting the need for alternative protein and other future foods will continue to grow. Perhaps more importantly, it is likely that, as with so many previous paradigm-shifting innovations (e.g., electric vehicles), the relative price of alternative protein foods will fall, their quality and quantity will increase, and they will become an increasingly integral part of people's everyday lives, eventually being viewed as normal, rather than alternative, protein sources.

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