PLANT-BASED CONVENIENCE FOODS: CONSUMER PERCEPTIONS, NUTRIENT PROFILE AND SATIETY

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Background of Research

Current food systems threaten population and environmental health. Increased plant-based food and reduced meat consumption may be more sustainable and healthier (Willett et al., 2019).

The plant-based (PB) food industry is thriving due to increased consumer demand for holistic benefits including health (Szejda et al., 2020). Contemporary lifestyles have also led to a rise in PB convenience foods which are typically ultra-processed (Weinrich, 2019). Processing increases safety and palatability but deleterious health consequences have been associated with ultra-processing, though there is a paucity of specific published evidence related specifically to PB foods (Srour et al., 2020; Aschemann-Witzel et al., 2020).

Traditional, nutrient dense, PB diets low in energy density and saturated fat are associated with a range of benefits such as a healthier BMI (Harland et al., 2016). PB meals may also promote satiety and reduce energy intake when compared with meat-based equivalents (Klementova et al., 2019). However, ultra-processing is linked to nutrient loss, including appetite-regulating nutrients (e.g., dietary fibre and protein) (Fardet et al., 2019). Despite the health halo often associated with PB eating, there is a strong rationale to improve consumer literacy of PB food products (Estell et al., 2021).

Theories of Segmentation identify sub-groups more pre-disposed to engage with innovative, healthier plant-based convenience foods. Diffusion of Innovation identifies predisposition to change while the Transtheoretical Model describes intentional behaviour change (Szejda et al., 2020). Together these models enable investigation of the perceptions and drivers/barriers to PB convenience foods consumption. Such findings can assist alignment of new product development and future marketing strategies (Boukid, 2021).

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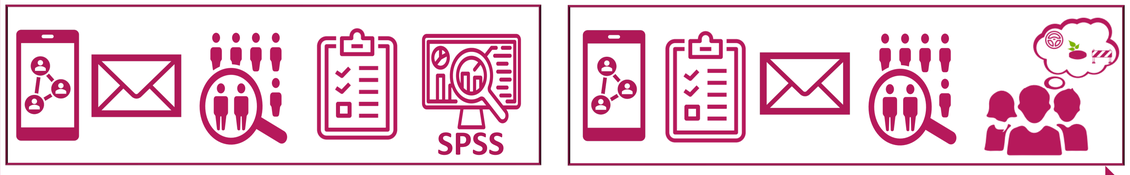
Proposed Research Design

Study One

A quantitative cross-sectional design, using convenience sampling via online communication platforms will recruit 150 UK adult questionnaire respondents. Questions will explore consumer health valuation and identify motivators or barriers to plant-based food consumption. Validated questionnaires will enable characterisation of intent and readiness to consume PB foods based on Diffusion of Innovation Theory and the Transtheoretical Model (Culliford et al., 2020; Goldsmith et al., 2017). Data analysis using SPSS will evaluate associations between variables.

Subsequent qualitative semi-structured interviews will include sub-questions encouraging discussion of emerging themes. Qualitative data analysis software will support thematic analysis and emergence of new themes will be coded and refined.



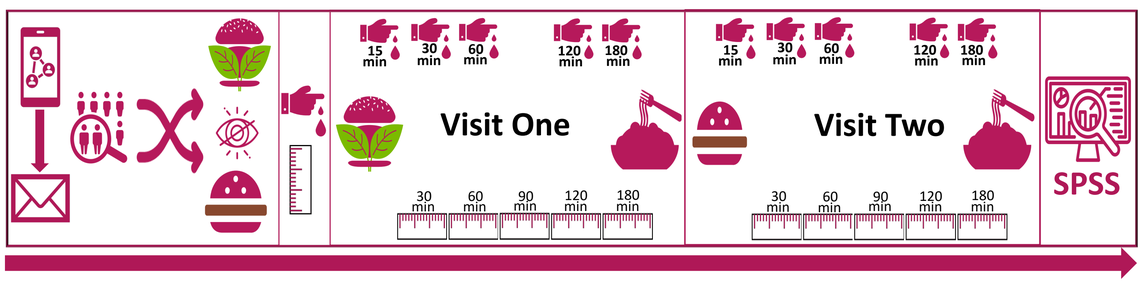
Study Two

Informed by outcomes from Study One and literature, PB and equivalent meat-based products meeting strict inclusion criteria will be selected. Contextual information including health claims, processing (according to NOVA criteria [Monteiro et al., 2019]) and nutritional quality will be analysed (2011 and 2018 UK Nutrient Profiling Model [Department of Health, 2011; Public Health England, 2018]). SPSS will be used to compare health value of PB convenience products against meat-based equivalents.

Study Three

A single-blinded randomised, two-way crossover study design will apply strict inclusion and exclusion criteria to recruit healthy adults via convenience sampling methodology.

Pre-screened participants providing written consent will complete two acute feeding days with a minimum 7-day washout. Laboratory and sensory analysis of five product pairs will identify comparable PB and meat-based trial products. Fasted participants will consume a standardised breakfast and a PB or meat-based appetiser before an *ad libitum* pasta lunch. Measurements will include blood glucose, appetite-associated hormones and satiety; taken at baseline and defined timepoints. The Sussex Ingestion Pattern Monitor will measure appetite and food weight throughout lunch to determine total consumption plus relative impact on satiation and appetite regulation (Yeomans, 2000). SPSS will analyse the efficacy of test meals in relation to outcome measures.



Research Questions:

What key drivers and barriers are associated with readiness and intent to engage with PB convenience foods in different consumer segments?

How does the nutritional profile of PB convenience foods compare with meat-based equivalents?

How do PB convenience compare to meat-based equivalents regarding satiating properties?

Research Aim:

To explore the consumer health valuation of PB convenience foods versus their actual nutritional profile and satiating potential.

Research Objectives:

- To measure current consumer understanding, engagement and health-related motivations to consume PB convenience foods through a cross-sectional survey.
- To explore consumer experience of PB convenience foods through semi-structured interviews.
- To analyse and evaluate the nutritional profile of PB convenience foods against suitable meat-based equivalents.
- To investigate the satiating efficacy of PB convenience foods against a suitable meat-based comparator through an acute feeding study design.

Impact of Research and Contribution to Knowledge

Exponential growth of the global population, projected to reach 10 billion by 2050, demands a shift towards sustainable food systems; equipped to deliver healthy food to current and future generations (Willett et al., 2019). Promoting healthier, sustainable food systems will also support global strategies such as the Sustainable Development Goals (White et al., 2020). Food manufacturers are recognising the urgency to deliver products with healthier nutrient profiles (National Food Strategy, 2021). Understanding the impact of degree of processing may help to justify use of innovative methods designed to maintain health benefits associated with particular foods. The proposed research will contribute to knowledge by increasing understanding of consumption behaviours and attitudes towards plant-based food products. In addition, furthering knowledge related to the nutritional value of plant-based convenience foods will increase consumer awareness and thus promote informed choice. This has the potential to impact on food manufacturing practise and thus influence future individual and planetary health (UoM, 2021).