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### **Abstract**

**Title:** Consumer Perspective of Plant-based Meat Alternatives at an Early Design Stage

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**Keywords:** plant proteins, meat alternatives, consumer perception, product development

**Introduction:** Diets are slowly shifting from conventional animal-based to more sustainable protein-rich foods. Plant-based proteins have been identified not only as more sustainable but also as healthy and nutritious sources that are applied in new meat alternative formulations. However, integrating consumer perspective in the early stages of designing plant-based meat alternatives is rare. Understanding consumer perceptions is pivotal to stimulate sustainable food consumption and contribute to the design of new plant-based food products that meet the needs and expectations of consumers.

**Materials and methods:** In this study, we explored consumer perception of criteria such as health, safety, sustainability, and price of meat alternative protein sources (soy, lentil, potato, pea, wheat, and fava bean). For this purpose, an online consumer survey was conducted among 269 young consumers (flexitarians = 143 and vegetarians = 156) in The Netherlands. Product-related (main and sub-criteria) and person-related (food choice motives and protein familiarity) factors concerning meat alternatives were compared among both groups.

**Results:** The findings show that consumers valued ‘safety’ and ‘sensory appeal’ as the most important characteristics of meat alternatives, with vegetarians ranking ‘sustainable production’ in the third place. Both vegetarians and flexitarians preferred lentil and pea as meat alternative protein sources and considered those as most healthy, safe, and sustainable. Generally, the more familiar consumers were with a protein source, the higher they rated it on the criteria scores. As for sub-criteria, consumers identified protein content (health), expiration date (safety), packaging material, and animal welfare (sustainability) as the most important features. As a next step, these consumer insights will be an integrated part of a multi-criteria decision-making platform, a tool that aims to assist in the decision-making process concerning choices for ingredients and processing conditions.

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