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# Consumer perceptions towards five popular alternative proteins. A systematic review across Western and Eastern countries

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Alternative proteins provide a better way to feed the world<sup>(1)</sup> and have great potential to support the United Nations' sustainable development goals in ending hunger, promoting sustainable energy use, protecting the climate, and promoting good health<sup>(2)</sup>. However, consumers' acceptance of alternative proteins is much lower than that of conventional meat<sup>(3)</sup>. With the alternative protein market consistently growing since 2021<sup>(4)</sup>, it is essential to summarise and update factors affecting consumer acceptance of alternative proteins to inform relevant organisations such as the government and support industry development. Using a systematic review, this study aimed to understand and compare consumers' acceptance of five popular alternative proteins (algae, pulses, plant-based alternative proteins, insects, and cultured meat) and identify research trends and essential factors influencing consumption of alternative protein foods. Specifically, the study compared familiarity and external factors in consumer acceptance.

Building upon an existing systematic which included studies published by 2020, five electronic databases were searched. This review followed PRISMA guidelines, covering Western and Eastern countries, and articles published between June 2020 and March 2023. A total of 112 articles from 40 countries were included. Following the innovation-decision process framework, factors between alternative protein types, products, and psychological and external variables are compared, and changes over time are identified.

Italy (n = 15), China (n = 13) and the United Kingdom (n = 12) were the top 3 in publication numbers. Surveys (n = 95) were the most used method in the studies. Insects (n = 41) and cultured meat (n = 21) were the most popular. The findings reveal that consumers show moderate acceptance of alternative proteins, but a relatively higher acceptance of food products made with these proteins. Tastiness emerged as the top concern in alternative protein consumption, highlighting the importance of sensory appeal. Environmental benefits plus health beliefs also played a significant role in consumer acceptance. Interventions to illustrate food safety and quality variables correlated to a higher willingness to consume alternative proteins. Food neophobia and diet showed distinguished value in consumer acceptance level. Participants who had experienced eating insects showed significant differences in food neophobia scores, subjective norms, attitudes, and intentions. Meal composition and trust in the chef increased consumers' willingness to consume. Many studies focused on developing alternative protein food products and determining their appropriateness for consumption in different contexts. Consuming alternative proteins with family or friends with positive emotions was more acceptable to consumers.

Consumers' different acceptance levels and critical factors of alternative protein consumption illustrated the essentials of focusing more on consumer categorisation. The fast expansion of the global alternative protein market and accelerated study output call for building a more complete standardised management and information supply system.

## References

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