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Innovation in mixed egg-plant foods for environmental and health benefits

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Since the early 1990s, major health and environmental concerns have developed and driven the emergence of diets involving a lower consumption of animal products. However, the transition towards greener diets is being hampered by the poor acceptance of vegan foodstuffs among western consumers. Mixed animal/ plant alternatives to familiar egg products offer a new field of innovation.

This review focuses on innovative mixes of egg with plant ingredients – especially legumes – to develop products in which interactions between animal and plant are not usually expected, such as egg gels, emulsions or foams. The opportunities offered by such products in terms of consumer acceptance, nutrition, digestibility and techno-functional properties are reviewed and discussed with respect to their risk-benefit ratios.

In many cases, animal/plant mixes offer enhanced protein stability and synergistic interfacial or textural properties that make them a flexible tool for food design. Animal/plant mixes enable reduction in animal protein consumption while preserving amino acid and micronutrient intakes and sensory properties. However, their acceptability to consumers and society will also depend on controlled safety, especially regarding allergies or contaminants, on affordability, their degree of novelty or (ultra)processing, their actual environmental footprint and whether they meet consumer expectations for innovative foods in the transition towards greener diets.