FOOD FILES

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What's really in the bottle? Authenticating avocado and olive oils in processed foods

Avocado and olive oils are recognised as premium edible oils and are increasingly incorporated into processed foods, including snack products, mayonnaise, and salad dressings. Both oils are extracted from fruit tissues, are rich in monounsaturated fatty acids, particularly oleic acid, and are valued for their nutritional benefits. Their inclusion is often driven by consumer demand for perceived health benefits and marketing strategies that distinguish products from those formulated predominantly with seed oils. However, the authenticity of these high-value edible oils remains a significant concern, with documented cases of adulteration reported particularly for bottled olive oil and, more recently, avocado oil. Numerous studies have demonstrated that products labelled as avocado oil may contain partial or complete substitution with lower-cost vegetable or refined oils, resulting in mislabelling, economic adulteration, and potential consumer deception.

Lopez-Alvarez and co-authors investigated the authenticity of avocado oil and olive oil used as the sole declared edible oil ingredients in commercially processed foods. By extracting lipids from chips, mayonnaise, and salad dressings and evaluating fatty acid and sterol chemical profiles against established compositional reference ranges, their work identified substantial discrepancies between labelled oil claims and measured composition, particularly among avocado oil–labelled products. Eighty-nine per cent of avocado oil–labelled products displayed compositional profiles inconsistent with authentic avocado oil, characterised by lower concentrations of palmitic acid, palmitoleic acid, *cis*-vaccenic acid, beta-sitosterol, and clerosterol, alongside elevated levels of stearic acid, campesterol, stigmasterol, delta-7-stigmastenol, and delta-7-avenasterol.

In addition, laboratory frying and emulsification experiments showed only minor changes in authenticity markers, indicating that conventional food processing conditions are unlikely to account for the substantial compositional deviations observed in the evaluated products. Although foods labelled with premium oils were typically marketed at higher retail prices, cost was not a reliable indicator of compositional authenticity. Their findings underscore the authenticity of high-value oil ingredients in processed foods as an emerging yet largely overlooked challenge within current food integrity frameworks. They emphasise that enhanced analytical surveillance of premium oil ingredients, extending beyond bottled oils to complex processed food products, is critical to improving label accuracy, mitigating economically motivated adulteration, and maintaining consumer confidence in premium oil claims.

Source: Lopez-Alvarez N, Li Xueqi, Vizgordiski B and Wang S.C. (2026) Authenticity of avocado and olive oils used as ingredients in commercially processed foods. *Applied Food Research* 6 102389. https://doi.org/10.1016/j.afres.2026.102389

From niche to norm: can labelling help make plant-based eating mainstream?

As the food industry looks for practical ways to support healthier and more sustainable diets, plant-based labelling has become

increasingly common. But what if current labelling practices are unintentionally doing the opposite of what they're meant to do?

A new study from researchers at Wageningen University suggests that the way we label plant-based products may influence more than consumer awareness. It may shape perceptions of what is "normal" to eat.

Most plant-based labels today appear on products such as meat alternatives, dairy substitutes or vegan snacks. Yet many inherently plant-based foods, such as vegetables, legumes, pasta and tomato products, are rarely labelled. According to the researchers, this selective approach may unintentionally position plant-based foods as a niche category rather than a mainstream choice.

To test this idea, the researchers conducted two large experiments involving more than 2,400 Dutch consumers in simulated online supermarkets. Participants completed realistic shopping tasks while researchers varied how plant-based and animal-based products were labelled.

The results were striking. When labels were applied to most or all plant-based products, consumers perceived plant-based foods as more widely available, even though the actual assortment remained unchanged. In other words, labelling altered perceptions of the food environment.

This shift in perception also influenced social norms. When all plant-based products carried a plant-based label, consumers were more likely to believe that other shoppers chose plant-based foods. The labels helped make plant-based eating appear more common and socially accepted.

However, increased perceptions did not automatically translate into higher plant-based purchasing. The most effective behavioural intervention was surprisingly different. In the second study, researchers labelled all animal-based products with a clear "contains animal-based ingredients" message. This approach significantly increased selection of plant-based products compared with both conventional plant-based labelling and no labelling at all.

For food manufacturers and retailers, the findings highlight an important strategic question: should sustainability labelling focus on identifying plant-based products, or on identifying products containing animal ingredients?

The authors argue that labelling can do more than provide information. It can help shape perceptions of availability and social norms, two powerful drivers of consumer behaviour. While the effects observed were modest, the intervention is relatively low-cost and scalable, making it attractive for retailers, brands and policymakers seeking to accelerate the protein transition.

The key takeaway for industry? Sometimes changing what consumers notice can be just as important as changing what's on the shelf. By reframing plant-based foods as the norm rather than the exception, labelling may become a useful tool in moving plant-based eating from niche to mainstream.

Source: Adema, H. *et al*. (2026). From niche to norm: Plant-based labelling strategies to shift social norms to support plant-based food choices. *Appetite*, 222, Article 108540. https://doi.org/10.1016/j.appet.2026.108540

Replacing sodium chloride with monosodium glutamate and/or potassium chloride in soups

Excess sodium intake remains a major public health concern, with most adults consuming well above the recommended daily intake. Reducing the sodium content of processed foods is a key strategy to improve population health, but reformulating foods without compromising taste remains a significant challenge. A recent study investigated whether partially replacing sodium chloride (NaCl) with potassium chloride (KCl) and monosodium glutamate (MSG) could maintain the sensory appeal of reduced-sodium soups, while also exploring how product information influences consumer expectations.

The study recruited 211 young adults from Malaysia who first completed an online choice task assessing how flavour, sodium content, sodium-reduction claims, price, front-of-pack labels, and the presence of KCl or MSG influenced their expectations of canned soups. Participants then attended a sensory session where they evaluated five soup formulations: no added salt (control), low NaCl, high NaCl, low NaCl + low KCl + high MSG, and low NaCl + high KCl + low MSG. Participants rated saltiness intensity and pleasantness using validated sensory scales.

Before tasting, flavour was the strongest driver of consumer expectations, followed by sodium content and price. In contrast, the presence of KCl or MSG had relatively little influence on expected product appeal. However, the sodium-reduced soups with high MSG and low KCl received the highest pleasantness rating, with the high-KCl and low-MSG soup and high-NaCl soups close behind. The low-NaCl and high-NaCl soups had similar pleasantness, demonstrating that adding more salt over a certain threshold did not necessarily improve consumer enjoyment.

The findings highlight the importance of evaluating both consumer expectations and actual sensory experience when developing sodium-reduced foods. While some consumers may initially be hesitant about ingredients such as MSG, these reformulations can successfully maintain flavour and overall eating enjoyment. For food manufacturers, strategically combining KCl and MSG offers a promising approach to reducing sodium while delivering products that remain appealing to consumers, supporting both public health goals and successful product reformulation.

Source: Olarewaju VO. *et al.* Sensory Perception and Pleasantness of Sodium-Reduced Soup Reformulated With Potassium Chloride and Monosodium Glutamate. *Journal of Sensory Studies*. 2026 Aug;41(4):e70167. https://doi.org/10.1111/joss.70167

Can food companies trust online consumer research?

Online consumer research has become an essential tool for food product development. From testing new flavours to evaluating packaging concepts and consumer acceptance, online surveys offer a fast and cost-effective way to gather insights. However, concerns have grown over data quality, particularly with inattentive respondents, bots, and the increasing use of artificial intelligence (AI). This raises an important question: can online consumer research still deliver reliable results?

Researchers from ETH Zurich compared the quality and consistency of data collected from four commercial online panel providers and one convenience sample, involving more than 4,600 participants. Rather than focusing only on response quality, they examined whether well-established relationships between food-related consumer behaviours, including food neophobia, picky eating, food disgust sensitivity and willingness to eat insects, remained consistent across different panels. They also evaluated whether excluding participants who failed attention checks or completed surveys unusually quickly influenced the overall findings

The results were reassuring. Although response quality varied between panel providers, with some panels showing faster completion times or higher rates of failed attention checks, the overall findings remained remarkably consistent. Relationships between consumer attitudes were highly reproducible across all panels, and a previously established model explaining consumer acceptance of cultured meat was also replicated. Importantly, removing inattentive respondents had little impact on the overall conclusions, provided reputable panel providers with appropriate quality control procedures were used.

For food manufacturers and researchers, the findings provide reassurance that online consumer studies remain a valuable tool for product development and market insights. However, not all online panels perform equally. Selecting reputable panel providers, designing robust consumer studies and incorporating appropriate quality checks remain essential for generating reliable consumer insights. As digital consumer research continues to grow, combining high-quality online panels with sound sensory and consumer research practices will support more confident product innovation.

Source: Siegrist, M., *et al.* (2026). How reliable are findings from online consumer research? Comparing the data quality and consistency of results across five panels. *Food Quality and Preference*, 106062. https://doi.org/10.1016/j.foodqual.2026.106062

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