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RESEARCH ARTICLE

Organic food retailing: to what extent are foods processed and do they contain markers of ultra-processing?

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ABSTRACT

In France, around 70% of conventional industrial foods are ultra-processed, with no data for organic foods. The objectives of this study were to evaluate the percentage of ultra-processed foods (UPFs) in industrially packaged organic ($n = 8554$) and conventional ($n = 45{,}791$) foods, and to describe their marker of ultra-processing (MUP) profiles. The percentage of UPFs and MUP profiles were determined with the Siga methodology. UPF percentages were 53% in organic foods and 74% in conventional foods, and there was 8% more organic UPFs in conventional stores than in organic stores. The more additive MUPs are used, the greater the quantity of non-additive MUPs. Conventional UPFs contained twice as many total MUPs as organic UPFs. Main MUPs in organic UPFs were refined oils, extracts and natural aromas, native starches, glucose syrup, lecithins and citric acid. Organic foods are, therefore, overall less ultra-processed although still containing high levels of nonadditive MUPs.

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Introduction

Organic agriculture and the consumption of organic foods are growing each year (FIBL and IFOAM – Organics International 2021; FIBL 2021), especially in response to environmental issues (Mie et al. 2017; Muller et al. 2017; Allès et al. 2019) and to a holistic view of quality connected to 'naturalness' as consumers' perception of organic food quality (Kahl et al. 2014). Organic foods have also been linked to lower risks of some chronic diseases, such as overweight/obesity (Kesse-Guyot et al. 2017), type 2 diabetes (Kesse-Guyot et al. 2020), metabolic syndrome (Baudry et al. 2018), atopic diseases (Kummeling et al. 2008) and cancers (Bradbury et al. 2014; Baudry et al. 2018) but only in a few studies, and more studies are likely still needed with regard to the human health perspective (Smith-Spangler et al. 2012; Średnicka-Tober et al. 2015; Mie et al. 2017; Vigar et al. 2019; Mesnage et al. 2020). Organic foods are also associated with the revegetation of our plate (Allès et al. 2019). However, paradoxically, vegans and vegetarians in France consume significantly more ultra-processed foods (UPFs) than omnivores (Gehring et al. 2021). Thus, it has been reported that organic UPFs may represent up to 27% and 31% of sales in organic and conventional stores (where UPF sales may reach up to 39%), respectively (Desquilbet et al. 2018). Therefore, although using fewer pesticides at the level of agricultural production, organic UPFs might not have the expected high positive environmental impact, notably because UPFs overall are not associated with sustainable food systems, i.e. they include intensive agriculture and breeding that produce markers of ultra-processing (MUP; Baker et al. 2020; Fardet and Rock 2020; Seferidi et al. 2020).

Compared to conventional UPFs, organic UPFs should therefore be less numerous in sales, notably because their manufacture is restricted to 48 additives among the more than 340 authorised in conventional food production at the European level (EUR-Lex 2008). In effect, numerous additives are markers of ultra-processing (A-MUPs), but there are also many nonadditive ingredient markers of ultra-processing (NA-MUPs; Davidou et al. 2021) that are not restricted to organic foods, e.g. protein and fibre isolates, glucose syrup, dextrose and refined oils. Organic foods may also be potentially subjected to drastic processes such as extrusion-cooking or puffing and are then also considered MUPs (Monteiro et al. 2019; Davidou et al. 2020). Therefore, despite the proposal 'to connect organic processing to related systems such as minimal, sustainable and careful, gentle processing, and to describe clear principles and related criteria'

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