PRODUCTION-RELATED SAFETY CONSIDERATIONS BY THE EUROPEAN FOOD SAFETY AUTHORITY REGARDING NOVEL FOODS DERIVED FROM FOOD INDUSTRY BY-PRODUCTS

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INTRODUCTION

Researchers and policymakers are currently exploring practices pertaining to circular economy and sustainability, covering aspects from the field to the fork. One of these practices is the use of food industry by-products (secondary products of the manufacturing process for commercial food products). The intention behind utilizing such by-products is to increase the efficient use of natural resources, reduce food waste and produce innovative foods and ingredients. Food products manufactured using new processes, derived from new sources, being newly synthesised/isolated compounds, and traditional foods from non-EU countries that were not consumed to a significant degree within the European Union (EU) before 15 May 1997, are considered 'novel foods' according to Regulation (EU) 2015/2283. Novel foods must be proven not to pose risks to human health before EU market authorisation is granted. The scope of this project is to identify elements related to the production of novel foods (identity, source, process, composition) derived from industry by-products and to analyse their role in the safety assessment performed by the European Food Safety Authority (EFSA), the EU entity responsible for such assessments.

METHODOLOGY

A search on the EFSA Publications website using 'novel food' as a keyword was performed on 30 September 2021, without chronological restriction [including assessments both under Regulation (EC) No 258/97 and Regulation (EU) 2015/2283]. The filters 'nutrition' and 'technical report and scientific opinion' were applied in the fields of 'topic' and 'type', respectively. Outputs on novel and traditional foods derived from industry by-products were selected as eligible. From the selected publications, information was collected on the identity of the source, on the production steps (e.g. extraction methods, processing) and on tested analytes linked to the aforementioned parameters.

RESULTS

The eligibility criteria were met by 10 outputs on foodstuffs and food ingredients derived from industry by-products of plant and animal origin (shrimp shells/heads, egg membrane, rooster combs, rapeseed solids, cocoa/coffee fruit pulp, corncobs, sugar beet molasses and tall oil soap). Regarding the production process, it was noticed that an enzymatic hydrolysis step is frequently implemented to break down macromolecules into structural units of lower molecular weight (e.g. proteins to peptides). Separation techniques (e.g. solvent extraction, filtration) are applied to increase purity and yield, removing undesirable elements. The final product may be in the form of powder, concentrated liquid or solids. Depending on the production steps, EFSA assessed several compounds, which could be linked to the identity and safety of the novel food. Microbiological indicators were investigated for evaluating the impact of various treatments on the final product (e.g. heating, filtration). When solvent extraction was utilised, the concentration of residual solvents was examined. Potential toxicants/antinutrients inherent to the source or introduced by the production process were also considered.

DISCUSSION

A relatively limited number of outputs on novel foods derived from industry by-products was retrieved. This circumstance may have several different causes. Firstly, it should be noted that not all possibly relevant products are considered ‘novel foods’, since they may not fulfil the respective regulatory requirements. Moreover, before 2018, the safety assessment of novel foods was not exclusively performed by EFSA. Indeed, several products appear in the Union list of authorised novel foods for which an EFSA evaluation does not exist since, in the past, assessments were also performed by the competent authorities of EU Member States. Such examples are the peptide extract from the olive pit, plum kernel oil and protein extract from pig kidneys. Furthermore, the safety assessment of several products is still ongoing, as shown in the Open EFSA Portal (e.g. protein peptides from barley and rice beer mash). Based on the food source and processing, the requirements for compositional analysis may differ, but commonalities regarding safety considerations exist. This work shows that the risk assessment of such products is harmonised but still tailored to the specificity of each novel food.