

## **The reuse of food by-products to formulate enriched foods**

Maria Marziliano, Amalia Conte and Matteo Alessandro Del Nobile

University of Foggia, 71122 Foggia, Italy

Many foods, during the production process, generate a lot of by-products that become food waste, with environmental and economic consequences. These byproducts are rich in bioactive compounds, so they could be reused. In this way, to embrace the concepts of the circular economy, waste can be turned in a new raw material. This review is focused on the opportunity to recycling byproduct in a new food through innovative technologies such as *zero waste* and the reuse of waste parts of food. The aim of the techniques analyzed in this study is the food functionalization: final product obtained with the addition of byproduct improved his nutritional, technological and sensorial characteristic and should be recognized as a sustainable food. This overview makes a critical analysis of the development of the scientific literature available to date on the reuse of food by-products to formulate enriched foods. First, a series of case studies is shown in which food was produced using the *zero-waste* approach and then a wide range of case studies relating to various food supply chains are discussed in which by-products are generated that can be partially reusable in new foods. In terms of food groups, fruit and vegetable products, the coffee industry, alcoholic beverages (wine and beer), the oil industry, the dairy industry, the by-products of legumes and cereals and the fishing industry have been analyzed.