

## THE USE EDIBLE INSECTS IN THE BAKERY INDUSTRY

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Climate change and the need to reduce the carbon footprint have led to the acquisition of new macronutrient resources. Unlike meat obtained from cell cultures, for which there are currently no European Regulations for authorization as an ingredient/new food in the European Union (EU) and no legislative regulation regarding the labeling of food products with this type of ingredient, starting from 2020, the Authority The European Food Safety Authority (EFSA) and the European Commission (EC) have authorized three insects as new food ingredients – the larva of *Tenebrio molitor*, *Locusta migratoria* and *Acheta domesticus*. In June of this year, EFSA issued a favorable Opinion for *Alphitobius diaperinus* as a new food ingredient, and the European Regulation for placing this new ingredient on the market is expected to be published by the beginning of 2023. The objectives of this paper were to identify the technological and qualitative characteristics of food products, in which one of the ingredients was an edible insect from the four authorized by EFSA and CE, the aspects of nutrivicilance, and invention patents worldwide.

The Web of Science, PubMed, ResearchGate and World Intellectual Property (WIPO) databases, the official EU legislation website ([european-union.europa.eu](http://european-union.europa.eu)) and scientific dossiers issued by EFSA for the authorization of insects have used edibles, for the period between 2016-2022.

Original articles on the use of edible insects in the meat, bakery, confectionery, and dairy industries were identified. Edible insect meal can be used as a functional ingredient for the manufacture of emulsified meat products. Although insect flours do not contain starch, due to their high protein content, they influence the formation of the gluten network by decreasing its strength. Bread with insect meal (*Tenebrio molitor*, *Acheta domesticus* and *Alphitobius diaperinus*) had acceptable volume and sensory qualities agreed by the tasters.

Edible insects represent a sustainable source of protein, for obtaining foods for which they have been authorized by EFSA and EC, such as *Tenebrio molitor* - multigrain bread and buns, crispy biscuits and breadsticks, cereal bars, pasta-based products dry, filled, premixes (dry) for bakery products, sauces, potato and/or legume-based preparations, meat-like products, chocolate bakery products, and others, provided for in Regulation (EU) no. 169 of 2022 - authorizing the introduction to the market of the yellow mealworm (*Tenebrio molitor larva*).

**Key words:** bakery, insects, protein source