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Microbial quality and food safety of edible insects as a novel and sustainable food matrix

Leen Van Campenhout
University of Leuven, Belgium

Traditional animal protein sources will not be able to supply the growing world population. Edible insects are put forward as a sustainable alternative. While the novel food regulation is currently being revised, in Belgium the Federal Agency for the Safety of the Food Chain (FASFC) has already authorized the marketing of ten insect species. A complete rearing and processing chain is now establishing in Belgium and other countries. Yet the knowledge on the microbial status and food safety of insects during rearing, processing and storage is very scarce. Therefore, we conduct several research projects aiming at investigating the microbial community of edible insects “from farm to fork”. An overview of the results obtained will be presented. As to the rearing phase, key aspects currently under investigation are the microbial dynamics during industrial rearing of mealworm larvae (*Tenebrio molitor*), house crickets (*Acheta domesticus*) and grasshoppers (*Locusta migratoria*), the impact of specific practices during rearing on the microbial quality, such as starving and rinsing before killing and transmission of pathogens from the substrate to the insects. Also a survey is being conducted on the microbial quality of different batches obtained from several industrial rearing facilities, using both culture-dependent analyses as well as culture-independent metagenomics. As to processing of insects, the impact of processing steps on the insect microbiota is determined. Processing steps currently under investigation include cooling, blanching, freeze-drying and microwave drying. Finally, shelf life experiments with a number of foods containing insects will be illustrated.

Biography

Leen Van Campenhout has completed her PhD in 2000 at the University of Leuven (KU Leuven), Belgium. From 1999 to 2004, she was R&D Manager in Enzymology & Microbiology in an international feed additive company. Then she became Professor at the Katholieke Hogeschool Kempen and at the University of Leuven. Her expertise is situated in food microbiology. Her main research topics include conservation (mild) of food using e.g., modified atmosphere packaging, the microbiology of new food matrices, such as insects and the implementation of new technologies, e.g., metagenomics, in the food industry.

leen.vancampenhout@biw.kuleuven.be

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