

IAEA-CN-332/278

Irradiation processing impact on microbiological quality of *Hermetia illucens* larvae meal contaminated with different pathogens

P. Ragozzino, V. de Fátima Benedetti, J. Eduardo de Souza, A. Casañas Haasis (IPEN-CNEN/SP) – Brazil

Edible insects have been widely used in animal feed and their inclusion in diets is justified by their excellent nutritional value, being proposed as a high-quality, sustainable, and efficient protein source. However, the quality of raw materials is as important as their efficiency and it can be altered by the presence of biological contaminants. Additionally, larvae chemical composition of some species can be modified through their diet and this alteration offers great potential for developing formulas that more objectively meet the nutritional needs of animals, aligning with the modern agricultural concept of precision nutrition. In this regard, one of the most effective methods to ensure the safety of foods and raw materials is the prevention of contamination and the concept of treatment through irradiation is already widely applied in the food industry, aiming to control or eliminate living organisms such as fungi and bacteria. This concept becomes even more important when part of the raw materials used in the production of these foods comes from insects that may be fed organic waste. From this perspective, this study will aim at evaluating the mycological and bacteriological effects of the treatment of *Hermetia illucens* larvae meal contaminated with pathogenic fungi such as *Fusarium* spp., *Aspergillus* spp. and *Penicillium* spp. and bacteria such as total coliforms, coliforms at 45 °C, *Escherichia coli* and *Salmonella* spp. using gamma irradiation at doses of 5 kGy, 7.5 kGy and 10 kGy. The results will be compared with the standards of current legislation, investigating the effectiveness in inactivating those microorganisms at the tested doses and the optimal dose achieved will be determined. Therefore, the results obtained will pave the way for the safe supply of customized food ingredients that can meet the modern concept of precision nutrition.