

Assessment of Chemical hazards in insect meal production for aquaculture feeds

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Insect meals are sustainable alternatives to the ingredients currently used in formulation of aquaculture feeds. However, the use of insects as feed raises safety concerns, stemming from a combination of factors: the nature of the substrate used to feed the insects, the specific production methods, the harvest stage, the insect species as well as the methods used for further processing. In fact, the presence of a wide variety of chemical contaminants, including heavy metals (Hg, Cd, Pb), metalloids (As), and POPs (persistent organic pollutants) such as Dioxins, PCBs, pesticides, can be found in these products. However, published data on hazardous chemicals in captive bred insects and their possible transfer from different substrates to insects and from insects to other animal species are scarce. Thus, the present study aims to assess the abovementioned chemical risks in insect meals and in fish feed, throughout the food chain. For that purpose, 6 agricultural by-products selected for the growth of *Tenebrio molitor* (TM) and *Hermetia ilucens* (BSF) and fish feed formulations obtained from the mentioned insects were screened for elements of toxicological concern by wavelength dispersive X-ray fluorescence spectrometry (WDXRF), using a 4 kW commercial system (Bruker S4 Pioneer), according to published methods. Pesticide residues, such as organochlorides, were monitored in the same samples, by GC-MS (Agilent 6890N with a 5973 Network GC/MS system at SIM mode), using a QuEChERS method from the literature. Preliminary results revealed that the agri-food by-products, as well as the insect meals tested, did not present chemical risks that could compromise their future use in feed formulations for aquaculture.

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