

Título: MYCOBIOTA AND MYCOTOXINS IN FINISHED FISH FEEDS FROM FARMS IN THE MINAS GERAIS STATE, BRAZIL

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Resumo:

Aquatic products represent an important food source for animal and human consumption, the rising demand of which had led to the fast development of aquaculture. An important limiting factor of the quality can be contaminated feed by fungi and their mycotoxins. Thus, the objectives of this work were to study the natural occurrence of fungi and mycotoxins in feed of different fish farms in the State of Minas Gerais. The quantitative enumeration of fungi as colony-forming units per gram of feed (CFU g⁻¹) was performed using the surface spread method. The species identification was performed through specific taxonomic keys. A commercially available enzyme-linked immunosorbent assay plate kit, AgraQuant[®], was applied for the quantification of aflatoxins, ochratoxin A, fumonisins, zearalenone and deoxynivalenol. Fish feed samples showed median total count of yeasts and molds of 1.0 x 10² CFU g⁻¹ on DRBC and 1.0 x 10³ CFU g⁻¹ on DG18. The frequency of fungal genera was *Aspergillus* sp. (73%), *Penicillium* sp. (73%), *Eurotium* sp. (55%), *Cladosporium* sp. (45%), *Paecilomyces* sp. (18%), *Rhizopus* sp. (3%) and *Chrysonilia* sp. (3%). According to the taxonomic keys, the relative density of the species was *A. flavus* (73%), *P. citrinum* (45%), *P. chrysogenum* (45%), *A. fumigatus* (18%) and *P. glabrum* (3%). The median of contamination for aflatoxins was 2.01 ppb, 0.57 ppb for ochratoxin A, 48.87 ppb for zearalenone, 510 ppb for deoxynivalenol and 1005 ppb for fumonisins. In all analysis was obtained a coefficient of determination of ≥ 0.98, indicating a good fit of the estimated curve to the data obtained. None of the samples exceeded the maximum permitted limits for fish recommended by Brazilian and international legislation. An explanation for this low contamination by fungi and mycotoxins is the use of additives anti-fungal (calcium propionate, propionic acid) and anti-oxidants (BHT, BHA, n-propyl gallate, etoxiquin) in the feed, the first inhibits the growth of fungi and the second reduces mycotoxin production since studies have related mycotoxin production by oxidative stress. Some of the brands tested still relied on mycotoxin adsorbents in its composition (hydrated sodium calcium aluminosilicate and bentonite). Low contamination levels are desirable, but we highlight the fact that some of these chemical additives have been implicated as carcinogenic and inorganic adsorbents can reduce the bioavailability of certain minerals and vitamins of the total diet.

Palavras-chaves: aflatoxin B1, fumonisin B1, fungi

Agência Fomento: FAPEMIG