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Determination of aflatoxin and fumonisin levels through ELISA and HPLC, on tilapia feed in Nayarit, Mexico

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Pages 269-278 | Received 04 Oct 2011, Accepted 07 Apr 2012, Published online: 14 May 2012

 Download citation <http://dx.doi.org/10.1080/09540105.2012.684202>

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Abstract

A survey of fungal contamination and presence of aflatoxins (AFs) and fumonisins (FBs) in 30 feed samples collected from 10 tilapia farms during three seasons in Nayarit State, located in north-western Mexico, was carried out using ELISA as screening and High-Performance Liquid Chromatography (HPLC) as confirmatory method. Mycobiota included *Aspergillus flavus* and *Fusarium* spp. AFs were detected in 63.3% of samples using ELISA, but confirmation by HPLC revealed that all samples were under the detection limit. Regarding to FBs, positive samples were detected using both methods, with 19 positive samples (60% of total) by ELISA and 14 positive samples (46.6% of total) by HPLC and levels ranging from 0.148 to 2.587 mg/kg. Correlation was observed between both methods ($r = 0.516, p = 0.004$) for FBs results. No sample exceeded the European maximum levels for any of the mycotoxins. Water activity of samples ranged from 0.345 to 0.655, suggesting that mycotoxin occurrence is probably related to raw material contamination.

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