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## Detection of diverse metabolites in fish feeds from Nigeria

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Fish feed being an indispensable requirement in fish farming is prone to contamination from diverse range of compounds such as pesticides, microorganisms and their metabolites because it is made up of several ingredients from both animal and plant sources. In this study, the contamination level of locally formulated fish feeds from different fish farms in Nigeria was determined. Ninety-four fish feed samples were collected in six states within South-western, Nigeria in 2013 namely; Lagos, Ogun, Oyo, Osun, Ondo and Ekiti states. The spectrum of mold metabolites including mycotoxins in the feeds was assessed using a Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS). Eighty-four metabolites from diverse molds were found in the feeds with co-occurrence of at least 25 per sample. Regulated mycotoxins for animal feeds: Total aflatoxins, fumonisin B1, zearalenone and deoxynivalenol co-occurred in 77.8% of samples, with the main combination being aflatoxins and zearalenone. Deoxynivalenol was detected in 87% of analyzed samples at concentrations ranging between 2–333 µg/kg. Aflatoxins B1 was the most prevalent aflatoxin with 97.9% occurrence and mean 108.17 µg/kg while fumonisin B1 was the highest prevalent fumonisin with occurrence of 88.3% at mean of 6097.90 µg/kg. This is the first report of Aflatoxin M1 in fish feeds and it was detected in 76 samples at mean concentration 4.8 µg/kg. Enniatins {A, A1, B, B1}, beauvericin and moniliformin, are new emerging mycotoxins which were found co-occurring with major mycotoxins at high concentrations. Considering the array and levels of mycotoxins and other mold metabolites detected in the sampled fish feeds, it could be posited that the fish feeds from these warehouses are of poor quality. Consumption of fishes fed these feeds and their products could pose a significant health risk to consumers.

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