

Detection and Levels of Some Mycotoxins and Biogenic Amines in Fish Diets and Feed Ingredients from Basrah, Iraq

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ABSTRACT

The present research was conducted with the aim of isolating and diagnosing mycotoxigenic fungi in fish feed and some of its components (soybean meal, yellow corn, wheat flour, barley flour and wheat bran), as well as determining the levels of biogenic amines contamination in fishmeal and animal protein concentrate. Samples were randomly collected from various locations in Basra province, with 1kg per sample, in October 2022 to represent the sample taken. The ability of some isolated fungi to produce aflatoxins was detected using three culture media (potato dextrose agar, yeast extract agar, and coconut agar) and three temperature levels (25, 30 and 35°C). Results showed that six types of fungi were isolated from the grain and fish feed samples. *Aspergillus niger* was the most frequent fungal species found in the studied samples, with a frequency rate of 22.7% to 34%. The fungal species *Alternaria alternata* ranked second in frequency rate, ranging between 11.16% and 20.96% in the studied samples. The remaining fungi, including *Rhizopus*, *Mucor*, *Penicillium* spp. and *Aspergillus flavus* had lower frequency rates than the two previous fungi. Some of the fungal species had the ability to produce aflatoxins at a temperature of 35°C, especially *A. flavus* and *A. niger* on the YES and PDA culture media. The production ability of the remaining fungi was low and varied. The results showed that the concentration of amines varied among the different samples. Histamine had the lowest concentration in the animal protein concentrate at 1.382mg/ 100g, while its concentration was higher in fish meal at 2.836mg/100g. Cadaverine had a lower concentration than histamine, with 0.384mg/100g in animal protein concentrate and increasing up to 0.778mg/100g in fish meal. It was concluded that monitoring fish feed and its components is necessary to detect levels of fungi, mycotoxins and various amines in order to maintain fish health.

INTRODUCTION

The success of fish farming depends largely on developing feeds, selecting and blending the suitable raw materials to achieve balanced diets, as it has a crucial impact on fish biological activity, growth and optimal health (Enyidi *et al.*, 2017). Fish feeds are typically manufactured from animal-based ingredients (slaughterhouse waste, fish and