Contaminating poultry feed and their products with mycotoxins produced by fungi may cause many health effects on animals and human if they are at high concentrations. Therefore, it is imperative to regularly monitor the concentration of mycotoxins specifically aflatoxin and ochratoxin A in the poultry feed and their products. In the present study, we demonstrated that Aspergillus flavus was the major contaminant. Ochratoxin A did not exceed the detection limit 50 ng/kg but in one sample has exceeded the European Union maximum limit for aflatoxins of 20 μg/kg. Aflatoxin b1 was detected in chicken liver samples. Almost all samples were contaminated with fungi but only 4 feed samples showed aflatoxin concentration within the detection limit.

Literature Review

Mycotoxins are mainly produced by Aspergillus, Fusarium, Rhizopus, Alternaria and Penicillium (Joshaghani et al., 2013). Some species of fungi produce these mycotoxins which are toxic metabolites that are secreted and found in feed, food and food products. Approaching 300 to 400 mycotoxins are indicated (Pereira et al., 2019). There most leading mycotoxins are aflatoxins (AFs), zearalenone (ZEA), ochratoxin A (OTA), trichotheccenes (TRCs) and fumonisins (FMs) (Rai et al., 2015). Some of the mycotoxins are identified as strong carcinogenic agents like AFs B1. The intake of food having mycotoxins may lead to mycotoxicoses which are diseases caused by such intake (Rai et al., 2015).

Objectives

1. Explore the presence of mycotoxins in poultry feed samples in Qatar.
2. Isolate and identify toxigenic fungi from poultry feed samples.
3. Explore the genes encoding mycotoxins and production potential of the isolated fungi.

Materials and Methods

Materials: Growth media DRBC, PDB, PDA, YES. Primers TS1, TS4, PAR1, PAR2, FLA1, FLA2, CAR1, CAR2, NIG and Gene-specific primers (OMT-208 – OMT-1232, APA-450 – APA-1482 and VER-496 – VER-1391, AoOTA-L – AoOTA-R) PCR, ELISA plate reader, plant DNA extraction kit.

Methods: Fungal species were isolated and identified by inoculating on DRBC, MEA and PDA. DNA was extracted using the plant DNA extraction kit and PCR is used for the molecular identification of isolates primers PAR1/PAR2, FLA1/FLA2, CAR1/CAR2, ITS1/NIG. Then, detect aflatoxigenic genes (APA, VER and OMT) Aflatoxin level was detected using total aflatoxin ELISA kit and Ochratoxin A was detected by Ochratoxin ELISA kit. Finally, ELISA assay was used for mycotoxins quantification of pure isolates.

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