

MYCOTOXINS IN AQUAFEEDS: POST-HARVEST MEASURES FOR AQUAFEED PRODUCERS TO PREVENT CONTAMINATION IN THE FINISHED DIETS

Paraskevi Koletsi*, Ben Lamberigts, and Philip Lyons

Alltech Coppens Aqua Centre
Valkenswaardseweg 47
5595 XB Leende, The Netherlands
vivikoletsi@gmail.com

Mycotoxins are toxic, secondary metabolites produced by fungi under specific environmental conditions on almost all agricultural commodities worldwide. Nowadays, the higher inclusion of raw materials derived from plant sources in fish diets in addition to climate change has enhanced the risk of mycotoxin contamination in aquafeeds. The best strategy to prevent mycotoxins in aquafeeds is to avoid the inclusion of contaminated raw ingredients in the diets. Therefore, plant ingredients should be checked for mycotoxin contamination as soon as possible before the feed production starts. This study aimed to define a proper mycotoxin-monitoring plan for plant ingredients including a mycotoxin test procedure (sampling, sample preparation, and analysis) and the comparison with accept/reject limits.

A literature study was conducted in order to determine the accept/reject limits in complete feeds for different fish species. After combining the limits suggested within European Commission legislation and the information derived from peer-reviewed scientific articles, the action limits were defined. These limits were applied to raw ingredients using the maximum inclusion level that each ingredient can be found in the diets (Table 1). Batches of plant raw ingredients are sampled after their arrival to the factory according to the guidelines of European Commission for sampling mycotoxins in feedstuffs. A rapid test for mycotoxin detection in raw ingredients (NEOGEN Reveal Q+ kits) was used to give quantitative results for the following mycotoxins: Aflatoxin B1, Ochratoxin A, T-2/HT2, DON, Fumonisin B1 and Zearalenone. The results from the mycotoxin analysis are compared with the maximum acceptable limits as defined for the raw ingredients in order to accept or to reject batches. Finally, another applicable preventive measure is the inclusion of a mould inhibitor (Fylax Forte) in the recipes that aids in the prevention of fungal growth in the finished feeds during storage.

Preventive measures cannot however guarantee the absence of mycotoxins from the diets. The adverse effects of mycotoxins that may exist in the complete feeds can be eliminated with the supplementation of a mycotoxin binder (Mycosorb A+) within the diets that can prevent their absorption by animals.

Table 1. Maximum acceptable mycotoxin limits in $\mu\text{g}/\text{kg}$ (ppb) for plant ingredients commonly used in Coppens diets that can be applied to all target species.

	Wheat	Wheat gluten	Corn gluten	Soybean meal
Aflatoxin B1	18	51	101	50
DON	525	4044	3033	1500
Fumonisin B1	17501	50556	101112	50000
Ochratoxin A	175	506	1011	500
Zearalenone	525	1517	3034	1500
T-2 & HT2	350	1011	2022	1000