

# PETFOOD SAFE 2010

## INTERNATIONAL CONFERENCE ON PET FOOD QUALITY & SAFETY

*Quality and safety: challenges and solutions*

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## 14<sup>TH</sup> ENM

## 14<sup>th</sup> NATIONAL MYCOTOXIN MEETING

*Mycotoxins: actions for prevention and control*



## ABSTRACT BOOK

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**WATER ACTIVITY, TOTAL FUNGI LOAD AND MYCOTOXINS CONTAMINATION  
DURING PRODUCTION OF SWINE FEED**

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One of the challenges of the animal feed industry is the control of fungal development during the manufacturing processes. Fungi growth is unwanted in the animal feed production. It may result in feed nutritional value reduction, mycotoxins formation and undesirable volatile compounds that inhibit consumption by the animal. Fungi development is influenced by biotic and abiotic stresses. However, during the feed production, the water activity (Aw) is the main factor to allow or not their development. Therefore, the knowledge of the Aw level in the diet is essential to sort the problem. The aim of this research is to monitor a pigs feed manufacturing line located at Chapeco city, Santa Catarina state, Southern Brazil, for the occurrence of levels of Aw, presence of aflatoxin B1 (AFB1), fumonisin B1 (FB1) and zearalenone (ZON) and total fungi load. It was identified 38 critical points in the processing line for monitoring parameters. Sampling at these points was made at different periods. Water activity was measured by the instrument Testo 650 and the average of three replicates was used for each sample. The analysis of AFB1, ZON and FB1 were performed by HPLC using immunoaffinity columns for cleanup of the extracts. For the analysis of AFB1 was performed post-column derivation with photo reactor and for analysis of FB1 to pre-column derivation with orto-ftaldehyde. The fungal count was performed using the standard methodology for counting yeast and fungi. The parameters data were collected and registered by sampling period and so an average of each sampled point. The Aw data obtained showed that at 11 points the average was above 0.75. Regarding mycotoxins detection, a co-occurrence of mycotoxins was observed. AFB1 and FB1 did not occur only in samples from 7 of the total critical points. ZON was detected in most of the critical points evaluated, except for one of them. The results of yeast and fungi count showed that the material of, virtually all sampling sites, presented a high load of both microorganisms. Only 11 points in the average score was equal to or less than 10<sup>4</sup> CFU (colony forming units), being the other points above that average score, reaching 10<sup>7</sup> CFU at 10 points. The high values obtained for Aw, the high fungi and yeast load, as well as the occurrence of the three Mycotoxins, showed that the swine feed manufacturing line had conditions for fungi growth and mycotoxin formation. That means that there is a need of a constant monitoring either of the raw material utilized (ingredients) as well as the in-line production in order to avoid contamination.

**Key words:** swine, water activity, fungi, mycotoxins, occurrence, feed, production.