

Heavy Metals and Mycotoxins in Swine Liquid Feed and Ingredients

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Background

Vomitoxin (DON) and Zearalenone are common to corn moulds and may negatively influence pig productivity and result in residues in animal products. Although pigs have requirements for several heavy metals, at high dietary levels, they can be toxic to the animal consuming them and/or accumulate in meat. In Ontario, 20% of grower-finisher pigs are fed with liquid feeding systems, but little information is available about liquid feeding practices.

Objective

The purpose of this study was to evaluate complete liquid diets and individual liquid feed ingredients for levels of DON, zearalenone and heavy metals.

Results

Mycotoxin levels in whey, corn distiller's solubles (CDS), bakery meal, sugar syrup, brewer's yeast, buttermilk and liquid feeds were low. In on-farm stored CDS samples, zearalenone levels were non-detectable and only one sample was above the detection limit for DON at 0.96 ppm. Fresh CDS samples contained 1.3 ppm and 1.2 ppm DON and zearalenone, respectively. This suggests that storage of CDS may result in a breakdown of harmful toxins. Levels of DON were 0.33, 0.21 and 0.24 in high moisture corn, dry feed and liquid feed, respectively and zearalenone was non detectable.

Contents of arsenic, cadmium, lead, selenium and mercury were within the normal dietary range or below the detection limit of the assay for all samples. In some samples of co-products, elevated levels of copper (up to 192 ppm in buttermilk), zinc (up to 255 ppm in the bakery product, 170 ppm in sugar syrup) and iron (up to 1200 ppm in stored CDS) were observed.

Take home Message

The current evaluation of the main co-products fed show they are safe to feed to animals and do not represent a risk to the consumer. Moreover, storage of liquid feed ingredients appears to degrade mycotoxins, which should be explored further. Elevated levels of iron in stored samples may be a result of leaching from the storage tanks.

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