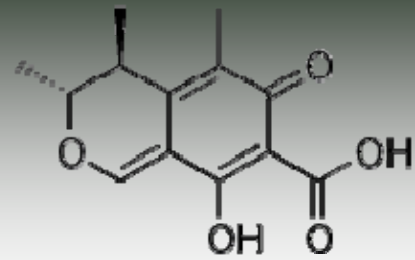


Citrinin



Citrinin—This is a yellow compound that is a phenol derivative. It is a lemon-yellow color when found on thin layer chromatograms viewed under visible light. The crystalline pure citrinin is also yellow.

Producing organisms—The name of the compound came from the organism *Penicillium citrinum* from which this mycotoxin was first isolated. Since that time the compound has been shown to be produced by several other *Penicillium* species and also by a select few species of *Aspergillus*.

Field occurrence—Citrinin has been isolated from its natural occurrence in cereal grains such as wheat, barley, oats, rice, and corn. Probably the major characteristics of its occurrence is that it often co-occurs with ochratoxin A in the cereals and most isolates of fungi that produce citrinin also produce ochratoxin A. The conditions under which citrinin occurs in the field are presumed to be similar to that for ochratoxin and levels have been found in cereal grains as high as 80ppm. Unfortunately, little is known regarding the field occurrence of either ochratoxin or citrinin.

Visible Presence of Citrinin in Grain—Again, grains with any visible presence of mold should be suspect and especially if the fungi are identified are found to be species that are capable of citrinin production. Musty smelling grain should be suspect of any mycotoxins only testing for the specific mycotoxins can be absolute proof.

Storage conditions favoring citrinin—it is likely that most of the citrinin in grains occurs during storage, at least until we gain further insight into the field occurrence. Therefore, grain should be adequately stored, kept dry, and at <14% moisture and insects damage should be avoided or kept to a minimum. Maintaining the integrity of the seed coat and avoiding favorable moisture for fungal growth can keep mycotoxins from forming during storage.

Toxicity impact—Toxicity concerns for citrinin appears to be aimed toward poultry with the effects primarily on the kidney of these species. Regarding its relative toxicity, citrinin appears to be considerably less toxic to poultry than either oosporein or ochratoxin A, two other important nephrotoxic mycotoxins. High levels of citrinin may affect the liver in addition to the kidney. In poultry common symptoms of toxicity by citrinin includes increased water consumption and diarrhea. These symptoms have been caused by levels as low as 130 and 260 ppm dietary citrinin. The diarrhea appears to be caused by the increased urine excretion due to altered function and degenerative processes of the renal tubules and not due to gastrointestinal disturbances. It is highly likely that when citrinin and ochratoxin occur in combination in grain and then fed to animals, there can be an exacerbation of the effects because of the similarity of the effects of both toxins. Any search for either toxin should include the other as well.

Regulatory aspects—No regulations are present for citrinin in commodities or any other product.