CHEMICAL TOXICOLOGY;  
New chemical toxicology study findings recently were reported by researchers at Utah State University

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"The extreme sensitivity of turkeys to aflatoxin B, (AFB(1)) is associated with efficient hepatic cytochrome P-450 (P450)-mediated bioactivation, and deficient glutathione S-transferase (GST) mediated detoxification. Butylated hydroxytoluene (BHT) protects against AFB(1) toxicity in turkeys through mechanisms that include competitive inhibition of P450-mediated AFB(1) bioactivation," researchers in the United States report.

"To test whether dietary BHT alters hepatic AFB(1)-DNA adduct formation, excretion, and bioavailability of AFB(1) in vivo, turkeys were given diets with BHT (4000 ppm) for 10 days, given a single oral dose of [H-3]-AFB(1) (0.05 μg/g; 0.02 μCi/g), then sampled at intervals up to 24 h. Radiolabel in serum, red blood cells, liver, and breast meat was frequently lower in BHT-treated compared to control. Hepatic AFB(1)-DNA adducts in BHT-treated turkeys were significantly lower at 12 and 24 h. BHT-fed birds had significant higher bile efflux, though biliary radiolabel excretion was not different from control. The amount of aflatoxin M-1 (AFM(1)) excreted in the bile was lower than in control, but BHT had no effect on the biliary excretion of AFB(1), aflatoxin Q, or glucuronide and sulfate conjugates," wrote J.A. Guarisco and colleagues, Utah State University.

The researchers concluded: "Thus, the chemopreventive properties of BHT may also occur through a reduction in AFB(1) bioavailability in addition to inhibition of bioactivation."

Guarisco and colleagues published their study in Food and Chemical Toxicology (Butylated hydroxytoluene chemoprevention of aflatoxicosis - Effects on aflatoxin B-1 bioavailability, hepatic DNA adduct formation, and biliary excretion. Food and Chemical Toxicology, 2008;46(12):3727-3731).

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