



## Aflatoxin and PAH exposure biomarkers in a U.S. population with a high incidence of hepatocellular carcinoma

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### ABSTRACT

The incidence of hepatocellular carcinoma (HCC) is significantly elevated in a Hispanic community in Bexar County, Texas. Chronic exposure to dietary aflatoxins (AFs) is a major risk factor for HCC; increased risk has been linked to polycyclic aromatic hydrocarbon (PAH) co-exposure and hepatitis virus infection. The aims of this study were to assess AF and PAH exposures, investigate dietary factors that may contribute to increased AF exposure, and determine the prevalence of hepatitis virus infection in Bexar Co. Blood and urine samples were collected from 184 volunteers for biomarker analyses and hepatitis screening. Serum AFB1-lysine adduct, urinary AFM 1 and 1-hydroxypyrene (1-OHP) levels were measured using high-performance liquid chromatography. The average AFB1-lysine adduct level detected in 20.6% of serums was  $3.84 \pm 3.11$  pg/mg albumin (range 1.01–16.57 pg/mg). AFM 1 was detected in 11.7% of urines, averaging  $223.85 \pm 250.56$  pg/mg creatinine (range 1.89–935.49 pg/mg). AFM1 detection was associated with increased consumption of corn tortillas ( $p = 0.009$ ), nuts ( $p = 0.033$ ) and rice ( $p = 0.037$ ). A significant difference was observed between mean 1-OHP values of non-smokers ( $0.07 \pm 0.13$ ) and smokers ( $0.80 \pm 0.68$ )  $\mu\text{mol/mol}$  creatinine ( $p = 0.01$ ). A high hepatitis C virus positivity rate (7.1%) was observed. Findings suggest that the incidence and level of AF and PAH exposure were less than those observed in a high-risk population; however, participants consuming higher amounts of foods prone to AF contamination may be more vulnerable to exposure and interactions with other environmental/biological factors (i.e., HCV).