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FILE: ■ **Kava** (*Piper methysticum*)

- **Liver Function**
- **Pacific Islanders**

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RE: Chronic Kava Consumption May Be Associated with Abnormal Liver Function

Brown AC, Onopa J, Holck P, et al. Traditional kava beverage consumption and liver function tests in a predominantly Tongan population in Hawaii. *Clin. Toxicol.* 2007;45:549–556.

Kava beverages are prepared from the rhizome of *Piper methysticum* and have been traditionally consumed by populations of the Pacific Islands for many years. Kava beverage consumption has spread to non-Pacific Island populations because of its clinically-documented anxiolytic properties. In recent years, kava has been developed as a dietary supplement by various nutraceutical and phytomedicine companies in North America, Europe, and elsewhere for the treatment of anxiety. Kavalactones are widely regarded as the primary active principles of kava. Kava does not appear to cause dependence, withdrawal symptoms, or changes in cognition; however, excessive kava consumption has been reported to lower body mass index (BMI) and blood lymphocytes, cause dermatopathy and gastroenteritis, and impair motor function. Liver toxicity has been reported in some individuals as the most serious potential adverse side effect of high doses of certain kava preparations, and some countries have banned the sale of kava preparations for this reason. Nearly all of the reported cases of hepatotoxicity associated with kava consumption involved ingestion of the preparations made as phytomedicines or dietary supplements and not the traditional root beverage. To date, no firm clinical or scientific evidence has been published establishing a causal link to the consumption of kava preparations and the incidence of liver dysfunction, and lacking such data, an agency of the German government has reversed its previous position that banned the sale of kava preparations in Germany. The objective of this study was to determine whether the chronic consumption of traditionally-prepared kava beverage was associated with abnormal liver function.

Sixty-two Tongan and non-Tongan residents of Oahu, Hawaii, with no history of liver disease were recruited for the study which was conducted at the University of Hawaii. The subjects were aged 18–64 years, 31 of whom were habitual kava beverage drinkers (n = 28 men and 3 women) and 31 of whom were not (n = 6 men and 25 women). Liver function

was assessed by measuring blood concentrations of aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase (ALP), γ -glutamyl transpeptidase (GGT), bilirubin, and albumin. The average kavalactone concentration of the kava beverages consumed by the kava consumers was 178 ± 30 mg/250 mL, which was determined by sampling kava beverages from 2 kava "drinking circles" and 1 kava bar in the study area.

Elevated GGT concentrations were observed in 65% of the kava consumers compared with 26% of the non-kava consumers ($P = 0.005$). Elevated ALP concentrations were observed in 23% of the kava consumers compared with 3% of the non-kava consumers ($P = 0.053$). ALT, AST, bilirubin, and albumin concentrations were within normal ranges in all of the study participants. No evidence of a dose-response relation between kava consumption and GGT concentrations was observed in low-to-moderate consumers of kava beverages. High kava consumption did correlate with GGT levels. Elevated GGT concentrations appeared to be linearly related to increases in BMI ($P = 0.063$), especially in the kava drinkers ($P = 0.01$).

The results "provide evidence of an association" between regular kava beverage consumption and elevated GGT and ALP concentrations in the predominantly male Tongan population of Hawaii. Because this study was observational in design, conclusions could be drawn only about associations between kava beverage consumption and liver function and not about causation. The authors concur with other researchers that chronic consumers of kava beverages should undergo routine liver function monitoring and should avoid the concomitant consumption of alcohol.

—*Brenda Milot, ELS*

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