Bile acids as colon carcinogens and coffee ingredients as antagonists

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High dietary fat is associated with increased colon cancer risk. A possible mechanism is that dietary fat stimulates hepatocytes to secrete bile acids into bile canaliculi which are necessary for solubilization and absorption of lipids in the gut (Hewitt et al. 2007; Hoehme et al. 2010; Hofmann 1999a, b; Modica et al. 2008). Bile acids have been reported to act as tumor promoters in the colon (Degirolamo et al. 2011; Gadaleta et al. 2010; Modica et al. 2008), most probably via generation of reactive oxygen species, a mechanism of central interest for our journal (Bhusari et al. 2010; Bolt and Hengstler 2010; Degirolamo et al. 2011; Kawai et al. 2010; Kell 2010; Kumar and Gill 2009; Michalowicz 2010). The editors are happy that Carol Bernstein and colleagues from the University of Arizona contributed a study that gives additional insight into the role of bile acids as colon carcinogens (Bernstein et al. 2011; this issue). They demonstrated that deoxycholic acid at high physiological levels induced colon carcinomas in mice. Addition of the antioxidative compound, chlorogenic acid to the diet clearly reduced tumor induction by deoxycholic acid, which is present at relatively high concentrations in coffee. Importantly, Bernstein et al. controlled the concentration of deoxycholic acid in feces of their mice by mass spectrometry and compared it to the human situation. Concentrations in the exposed mice were 4.6 mg deoxycholic acid/g dry feces compared to only 0.3 mg/g in control mice. In humans, deoxycholic acid concentrations range between 2.3 and 4.1 mg/g dry feces for non-controlled diets and may increase to 6.4 mg/g for high fat diets. Therefore, the data of

Bernstein and colleagues demonstrate that deoxycholic acid may contribute to human colon carcinogenesis.

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