In vitro approaches to assess the effects of açai (Euterpe oleracea) digestion on polyphenol availability and the subsequent impact on the faecal microbiota

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Abstract.

A considerable proportion of dietary plant-polyphenols reach the colon intact; determining the effects of these compounds on colon-health is of interest. We hypothesise that both fibre and plant polyphenols present in açai (Euterpe oleracea) provide prebiotic and anti-genotoxic benefits in the colon. We investigated this hypothesis using a simulated in vitro gastrointestinal digestion of açai pulp, and a subsequent pH-controlled, anaerobic, batch-culture fermentation model reflective of the distal region of the human large intestine. Following in vitro digestion, 49.8% of the total initial polyphenols were available. In mixed-culture fermentations with faecal inoculate, the digested açai pulp precipitated reductions in the numbers of both the Bacteroides-Prevotella spp. and the Clostridium-histolyticum groups, and increased the short-chain fatty acids produced compared to the negative control. The samples retained significant anti-oxidant and anti-genotoxic potential through digestion and fermentation. Dietary intervention studies are needed to prove that consuming açai is beneficial to gut health.