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Phenolics-enriched extracts from Brazilian native fruits: *In vitro* and *in vivo* evaluation of the metabolism and health effects

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Proanthocyanidins, flavonoids and ellagic acid derivatives are polyphenols found in high concentrations in Brazilian native fruits such as jaboticaba (*Myrciaria jaboticaba* Vell. Berg), camu-camu (*Myrciaria dubia* (Kunth) McVeigh), and cupuassu (*Theobroma grandiflorum* (Willd. ex Spreng.) K. Schum). Those compounds are known due to their cancer chemo preventive, cardio protective and antioxidant potential. However, little is known about their bioavailability and metabolites, which are the biologically active compounds indeed. Here, the aim is to investigate the metabolism of different classes of polyphenols present in native fruits, and the potentially health-beneficial biological activity, in both *in vitro* and *in vivo* assays. The metabolites formed from the jaboticaba polyphenols were identified in an *in vitro* fermentation model using human feces. In addition, the fate of a wide variety of metabolites was monitored after intragastric administration of jaboticaba extract (15 min – 8 h) in Wistar rats, using an UPLC-MS. The *in vitro* experiment showed that the ellagic acid derivatives were metabolized by the intestinal microbiota and degraded under testing conditions. Two compounds were identified after fermentation with fecal inoculum, p-hydroxybenzoic and p-hydroxyphenylacetic acids. *In vivo*, thirty eight metabolites were identified in plasma, stomach, liver, kidneys, brain, muscle and colon, and most of them were formed from ellagic acid derivatives. We also investigated the role of phenolic-rich extracts from those fruits upon oxidative stress and metabolic changes associated with a high fat (HFD) or a high-fat, high-sucrose (HFHS) diet in Wistar rats and C57BL/6J mice.

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