Evaluation of plasma phenolic compounds by UPLC-MS after Yerba Maté (*Ilex paraguariensis*) ingestion in rats.

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Yerba Maté is a plant rich in phenolic compounds, mainly monocaffeoylquinic and dicaffeoylquinic acids. In order to determine mechanisms by which yerba maté beverages exert biological activities correlated with health maintenance, studies of these bioactive compounds bioavailability and derivatives metabolites are necessary. The phenolic acids present in plasma after yerba maté ingestion were evaluated in Wistar rats. Animals received mate tea by gavage (2g mate tea powder/kg body weight) and were euthanized after 30, 60, 120, 240 and 480 min. Plasma samples were incubated with and without β-glucuronidase and sulfatase enzymes, subjected to solid phase extraction and analyzed by UPLC-ESI-MS. Three isomers of caffeoylquinic acid (CQA) appeared early (30 min) in plasma (53% as glucuronides). C\text{max} for the 5-CQA isomer was 352 ± 251 nM. Other phenolic acids were found as a result of metabolism: caffeic (95% as glucuronide), ferulic and isoferulic acids (83% as sulfates and/or glucuronides) at T\text{max}=60 min, m-cumaric (36% as glucuronide and/or sulfate), hippuric, hydroxiphenylpropionic and dihidrocaffeic acids (in free form) at T\text{max}=480 min. Vannilic and p-cumaric acids were detected below the LQ. No dicaffeoylquinic acids were found. The most abundant metabolites were caffeic (3455 ± 79 nM) and hydroxiphenylpropionic acid (9360 ± 5332 nM). The results suggest that absorption of intact CQAs begins in stomach. A portion is absorbed after cleavage of ester bond and appears mainly as caffeic acid or its methylated forms (ferulic and isoferulic acids). Hippuric, dihidrocaffeic and hydroxiphenylpropionic acids appear later, after 240 min of ingestion, after colonic microflora metabolization.