Metabolomic approach determine exposure to bioactive compounds after consumption of tropical highland blackberry (Rubus adenotrichus) juice

To cite this version:
j.M. Fallas-Ramírez, Claudine Manach, Jean-Francois Martin, Bernard Lyan, Estelle Pujos-Guillot, et al.. Metabolomic approach determine exposure to bioactive compounds after consumption of tropical highland blackberry (Rubus adenotrichus) juice. 6. Journée scientifique du CNRH Auvergne, Nov 2013, Clermont-Ferrand, France. 2013, 6ème Journée scientifique du CNRH Auvergne. hal-02747226

HAL Id: hal-02747226
https://hal.inrae.fr/hal-02747226
Submitted on 3 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire HAL, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.
Metabolomic approach determine exposure to bioactive compounds after consumption of tropical highland blackberry (*Rubus adnemotrichus*) juice

1Fallas-Ramírez JM, 2Manach C, 2,3Martin JF, 2,3Lyan B, 2,3Esteve Pujos-Guillot, 4,5Vaillant F.

1Instituto de Investigaciones Farmacológicas (INFAR), Universidad de Costa Rica, San José, Costa Rica
2INRA, UMR 1019, Human Nutrition Unit, University of Auvergne, CRNH Auvergne, Clermont-Ferrand, France; claudine.manach@clermont.inra.fr
3Metabolism Exploration Platform (PFEM), INRA, Clermont-Ferrand, France
4UMR QUALISUD, Centre International de Recherche Agronomique pour le Développement (CIRAD), Avenue Agropolis, TASS/PSP, 34398 Montpellier Cedex 5, France
5Centro Nacional de Ciencia y Tecnología de Alimentos (CITA), Universidad de Costa Rica, San José, Costa Rica

INTRODUCTION
Consumption of polyphenol-rich foods continues to be the focus of attention because of their putative impact on human health. Tropical highland blackberry (*Rubus adnemotrichus*) juice is widely consumed from Mexico to Ecuador and represents an important source of ellagitannins and others phytochemicals for the population. Using blackberry as a model for other tropical fruits, we have shown how metabolomic profiling can be used to characterize individual exposure to bioactive molecules and their metabolites in a nutritional trial on healthy volunteers.

NUTRITIONAL STUDY DESIGN
Fourteen Costa Rican men consumed for 8 days a daily dose of 250ml of a locally produced and well characterized blackberry juice, as part of a controlled diet.

RESULTS

**IDENIFICATION OF THE UROLITHINS AS MAJOR DISCRIMINANTS IONS**
The mass spectra of the discriminant ions show the parent ions, in both cases mono-glucuronide derivatives, as well as correlated fragments and adducts. The major ion in both cases corresponds to the in-source fragmentation into aglycone. The chromatograms of the aglycone fragments at RT 9.78 and 10.92 for UA and UB respectively, show the marked intensity increase after blackberry juice consumption.

**CHARACTERIZATION OF VOLUNTEERS**

**CONCLUSION**
The metabolomic analysis discriminated the consumption of blackberry juice by the volunteers with more than 60 strong discriminants. Interestingly, the microbial metabolites of urolithins, urolithin A-glucuronide and urolithin B-glucuronide, were the most important discriminants but other ions currently under identification could also contribute to blackberry juice health effects. Correlations will be searched between all discriminant metabolites and the individual capacity to produce UA and UB to further investigate inter individual variation in response to blackberry juice intake.