

# Developing a local food composition database

## Success story in the Ecuadorian context

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### Background

The initiative of developing a local food composition database emerged in the frame of the Project “Food, Nutrition and Health”, which is part of the collaborative program between Cuenca University in Ecuador and the Council of Flemish Universities-Interuniversity cooperation program (VLIR-IUC) in Belgium. This is an interdisciplinary project focuses on solving problems related to food quality and safety, and diet and physical activity patterns in the region. We started working in this project in 2007.



### Improve evidence base

One of the major activities of the project was the nutritional evaluation of target populations. When performing this, the huge gap of information on food composition in the country was evidenced i.e. lack of a national food composition database, updated and with a well- explained methodological framework. Therefore, we decided to generate our own data on food composition.

### Programme implementation

Unfortunately, the resources were not enough to work at national level, instead a local work was developed. In 2009, thanks to the VLIR-IUC collaboration, we started with the implementation of the laboratory of Food and Nutrition at the Faculty of Chemical Sciences of Cuenca University. In 2010, we designed the project to analyze foods locally produced and prepared for which no data were available in databases of neighbor countries. Macronutrients were selected as key nutrients because our main goal was to evaluate energy content. To document and warrant the sample traceability and data quality, pre-analytical and post-analytical protocols were prepared based on recommendations from INFOODS and EuroFIR. A sampling plan was designed to collect representative samples from the main local markets and supermarkets.

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## Success

In total, we analyzed 137 food items and our colleagues working on Nutritional Epidemiology were (and still are) the main users of these data. In 2014, we applied for a grant to research call at Cuenca University and we received additional funding to complete the local food composition database with data on mineral content. At the moment, we are in the first phase of this project that comprises the analysis of Na, K, Mg, Ca, Fe, Se, Cu, Zn and P in the ash material we kept from the foods already analyzed for macronutrient content. This subproject also aims to evaluate the seasonal variations in nutrient content (macronutrients and mineral) in some vegetal foods produced in the region. In addition, we are gathering information on food data generation at country level (e.g. from pre-graduate and post-graduate theses, repositories, research papers). This information will be further used for evaluation of geographical differences and, possibly, to develop a systematic review of Ecuadorian food data. Simultaneously with this work, we are organizing our data for further publication in compliance with the *FAO/INFOODS guidelines for checking food composition data prior to the publication of a User/Table Database (Version 1.0.)* The approximate budget that we have invested in the development of this local food composition dataset, including laboratory equipment, is about \$100.000 spread over the last 5 years of work.

## Source

The following scientific contributions have been generated based on these data:

- Ochoa-Avilés, A., Verstraeten, R., Lachat, C., Andrade, S., Van Camp, J., Donoso, S., & Kolsteren, P. (2014). Dietary intake practices associated with cardiovascular risk in urban and rural Ecuadorian adolescents: a cross-sectional study. *BMC Public Health*, 14(1), 939.
- Ortiz J, Astudillo G, Ochoa A, Andrade S, Escobar P, Tobar V, Donoso S. (2014). Variabilidad en la composición nutricional de alimentos locales de Cuenca, Ecuador. V Congress of Food Engineering and XIV Meeting for Food Science and Technology. Organizer: DECAB-Escuela Politécnica Nacional. Quito, Ecuador. Noviembre 25-28<sup>th</sup>, 2014.
- Escobar P, Grootaert C, Ortiz J, Zhang J, Van De Wiele T, Van Camp J. (2014). Bioaccessibility of carotenoids from guava and its processed products: in vitro gastrointestinal simulation. V Congress of Food Engineering and XIV Meeting for Food Science and Technology. Organizer: DECAB-Escuela Politécnica Nacional. Quito, Ecuador. Noviembre 25-28<sup>th</sup>, 2014.
- Ortiz J., Ochoa A., Andrade S., Escobar P., Abril V., Astudillo G., Van Camp J., Donoso S. (2011). Pilot study to develop a food composition database for a Southern region of Ecuador. 9th International Food Data Conference. Organizers: Food and Agriculture Organization (FAO), International Network of Food Data Systems (INFOODS), European Food Information Resource (EuroFIR AISBL), Food and Health Network (FHN). In: Food composition and Sustainable Diets, editors: Wright D. & Finglas P., pg. 146. Norwich-UK. September 14-17<sup>th</sup>, 2011.

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