

New databases on food compounds and the food metabolome to support discovery of novel dietary biomarkers – A FoodBAI initiative

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Abstract: One of the aims of the FoodBAI (Food Biomarkers Alliance) project (<http://foodmetabolome.org>) is to develop the missing tools and resources to facilitate the identification of food intake biomarkers using metabolomics. A compound database with extensive coverage of the food metabolome and a food intake biomarkers database were identified as the priority needs. The most comprehensive database on food constituents and their chemical and biological data, FooDB (www.foodb.ca), as well as the expert-curated database PhytoHub (www.phytohub.eu) focused on dietary phytochemicals are being enriched to include new contents on food non-nutrients and their human metabolites, including the known metabolites described in the literature and in silico predicted metabolites. In parallel, a new database, Exposome-Explorer, is being developed to include all known dietary biomarkers (currently n=142) and rich information on their measurement in various populations.

Beyond databases, the lack of commercial standards for food-derived metabolites is another major limitation in nutritional metabolomics. FoodComEx (Food Compound Exchange, <http://foodcomex.org/>) is a new chemical library initiated to facilitate the sharing of not easily accessible standards for diet-related compounds. FoodComEx is an online catalog of pure compounds made available by academic laboratories. Compounds are stored in the laboratory where they have been isolated or synthesized. Anyone interested in one compound can contact the provider and a bilateral negotiation will define the terms of collaboration, within the rules defined in a charter of good practices. FoodComEx is a collaborative initiative widely open to new contributors and users.

Another resource developed in the FoodBAI project is a web portal (<http://foodmetabolome.org/wpkg4>) which presents and links to the most useful tools, databases, libraries of spectra, softwares for nutritional metabolomics and dietary biomarker discovery, and will propose tutorials, webinars, and news related to the Food metabolome.

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