

Editorial

Bioactive Molecules in Food: From Food Composition and Dedicated Databases to Metabolomic Pathways

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The categorization and classification of compounds with nutritional and nutraceutical features have emerged as a need for consumers and industry, and the development and implementation of specific and dedicated databases throughout harmonized and standardized approaches based on both analytical and collected data taken from the literature are crucial. Food Composition Databases and dedicated databases are addressed to produce, collect, and present data in a standardized format to compare data from different databases and countries.

The construction of databases is based on standardized and harmonized procedures for production, collection, compilation, and publication of food data (description, selection, collection, preparation, references, analytical approach and/or value documentation, calculation, and compilation). The design and construction of food databases require foremost the exact identification of foods through an adequate food nomenclature and a precise description. A coherent food description and classification system is essential. In addition, the understanding of the activities and benefits of biologically active compounds in humans is crucial. Updated information on bioaccessibility, bioavailability, and pharmacokinetics of target compounds, new data on novel dietary biomarkers, and an assessment of metabolites pathways are needed.

This special issue explored the following topics: (i) distribution and occurrence of compounds with nutrient and nutraceutical attributes in foods and food groups; (ii) original analytical data, data from the literature, and data

traceability; (iii) plant metabolic pathway databases; (iv) new datasets/dedicated databases for nutrients and bioactive compounds; (v) metabolite data and new sets of biomarkers; (vi) aspects of data structure and data mining from currently available and published data and how to include or exclude them; (vii) compositional data on new foods and food products available in the market; (viii) optimization of sample description and sampling procedures as well as value documentation and calculation procedures, i.e. recipe calculation, assessing yield and retention factors, performing quality data evaluation index; (ix) datasets/databases on conventional and emerging categories of foods: traditional, certified, branded foods and recipes, as well as functional and fortified foods, non-conventional foods, and food waste; (x) classification of food groups, with focus on emerging categories and ontologies and application of description and classification food systems, examples of coding procedures, and semi-automatic and automatic systems; (xi) matching processes for linking food composition data to food consumption data; (xii) food labeling.

In this context, Sagar et al. [1] described and gave new data on physicochemical and thermal characteristics of onion skin from fifteen Indian cultivars for possible food applications. Another example given by Kumar et al. [2] evaluated the chemical, functional, spectral, and thermal characteristics of *Sargassum wightii* and *Ulva rigida* from the Indian Coast.

All articles, which are part of this Special Issue, reflect modern trends and outline new ideas for future network

collaborative research from the perspective of interoperability and sharing data for development, management, applications, and benefits of Food Composition Databases and Dedicated Databases, by contributing to the growth of this area of research and adding information scientifically substantiated by new data.

We hope that the readers will find this Special Issue interesting and inspiring.

Conflicts of Interest

The Guest Editors declare that there are no conflicts of interest.

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References

- [1] N. A. Sagar, A. Khar, Vikas, A. Tarafdar, and S. Pareek, "Physicochemical and thermal characteristics of onion skin from fifteen Indian cultivars for possible food applications," *Journal of Food Quality*, vol. 2021, Article ID 7178618, 11 pages, 2021.
- [2] Y. Kumar, A. Tarafdar, D. Kumar, K. Verma, M. Aggarwal, and P. C. Badgujar, "Evaluation of chemical, functional, spectral, and thermal characteristics of *Sargassum wightii* and *ulva rigida* from Indian Coast," *Journal of Food Quality*, vol. 2021, Article ID 9133464, 9 pages, 2021.