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The European Food Information Resource Network (EuroFIR) internet-deployed database (EuroFIR BASIS): an online composition and biological effects database of plant-based bioactive compounds

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There is growing evidence that certain non-nutritive bioactive compounds, in particular secondary metabolites of plants, may promote optimal human health and reduce the risk of chronic disease⁽¹⁾. Composition data on bioactive compounds are an essential cornerstone in nutrition and health research; for example, in the assessment of dietary exposure to polyphenols. Biological effects data may also have valuable applications; for example, in the assessment of health claims. EuroFIR is developing the unique EuroFIR BASIS, which includes data on the composition and biological effects of bioactive compounds.

EuroFIR BASIS involves twenty-eight participants from seventeen countries, organised into three task groups: composition; biological; plant source. Experts in composition and biological effects of specific compound classes and health and disease outcomes are designated to their appropriate task groups, which are coordinated by composition and biological effects database managers respectively. Data from the published literature are critically assessed and extracted for inclusion in the database via input forms designed for the purpose. Data are evaluated and graded using predefined criteria. A quality assurance system for food composition data developed by the EuroFIR Network was applied to EuroFIR BASIS. Major European food plants are listed and supplementary information on compound classes and biomarkers is provided. EuroFIR BASIS is searchable by compound, plant food or biological effect, outputs are user driven and reports can be exported to chosen spreadsheet formats. An example of a composition report extract is shown.

Reference	Plant	Compound class	Compound	Mean	SD	Unit	Quality
C107	Walnut	Phytosterol	Campesterol	1.08	0.018	mg/kg	A
C0644	Pistachio nut	Phytosterol	Sitostanol	59	2	mg/kg FW	B
C0123	Soyabean	Phytosterol	β-Sitosterol	1180	40	mg/kg FW	B

FW, fresh weight.

The following example is an extract from a biological report showing results from a search of phytosterol interventions in human subjects. Users can link to the original abstract via the reference code.

Reference	Compound	Concentration	Duration	Biomarker	Results	Quality
B0252	Sitostanol	2 g/d	4 weeks	TC, LDL, HDL, TAG, FMD	Lowered TC and LDL	A
B0272	Sitostanol	3 g/d	6 weeks	TC, LDL, HDL, TAG, apoA, apoB	Lowered TC	B
B0273	β-Sitosterol	22 mg/kg	29 d	TC, LDL, HDL, TAG, apoA, apoB, CRP	Increased HDL	B

TC, total cholesterol; FMD, flow-mediated dilation; CRP, C-reactive protein.

EuroFIR BASIS contains information on sixteen compound classes, e.g. phytosterols, polyphenols, glucosinolates and lignans. Currently, there are data on 238 individual compounds and 182 plant-based foods in the database from >500 published references and data from processed foods such as wine, soya products and chocolate are included. EuroFIR BASIS is aimed at expert users including researchers, food consumption database managers, food regulatory and risk assessment authorities and product developers within the food and nutrition industries. The database structure facilitates continual expansion and updates of compound classes, foods and biological effects data. It is anticipated that EuroFIR BASIS will provide a single authoritative source of food composition data on bioactive compounds in Europe.

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1. Gry J, Black L, Eriksen FD, Pilegaard K, Plumb J, Rhodes M, Sheehan D, Kiely M & Kroon P (2007) *Trends Food Sci Technol* 18, 434–444.