Further Developments in EuroFIR BASIS
- an on-line composition and biological effects bioactive compound database

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Overview

- What is EuroFIR BASIS?
- Quality assurance
- Usability testing
- Reporting
- Current status and future plans
EuroFIR BASIS – key features

- On-line database
- Composition AND biological activity data
- 16 major bioactive compound classes
- Plants and plant-based foods
- Peer-reviewed literature

- Anthocyanins
- Capsaicinoids
- Carotenoids
- Coumestans
- Cysteine sulphoxides
- Flavanols
- Flavanones
- Flavones
- Flavonols
- Glucosinolates
- Isoflavones
- Lignans
- Polyacetylenes
- Stilbenes
- Pro(antho)cyanidins
- Phytosterols

Data from primary peer-reviewed literature
Data submitted by expert into input form, including quality assessment
Links to plant info, compound info, LanguaL food description
REPORTING
Applications

- **Food authorities**
  - Regulatory issues
  - Assessing health claims
- **Researchers**
  - Estimating exposure levels
  - Epidemiological studies
  - Supporting submissions to research
  - Evaluation of GM foods
- **Industry**
  - New product development
  - Functional ingredients

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Compilation process

Selection of:
- Evaluators
- Compound classes
- Food plants

Reference selection - Identification of data relevant for each relevant compound

Useful data reference

Continue evaluation

Data entry by evaluators

Attribution of quality score to all original data

YES

DBM requests revision

Compilation process

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Usability testing

To establish an understanding of potential user groups and their requirements

- 7 users from target groups (food regulatory bodies, researchers, food industry)

- Commented on key qualities of the database:
  - LEARNABILITY – can users easily grasp how to use the software the first time?
  - EFFICIENCY – can they complete tasks effectively?
  - MEMORABILITY – do they remember how the next time?
  - ERRORS – the system should have a low error rate
  - SATISFACTION – do they feel positive about the experience?

Outcomes

- Positive scores for all attributes

- Suggestions included:
  - Improvements to layout of reporting
  - Access to supporting data
  - Inclusion of ‘help’ tools
  - Worked examples

- These have since been addressed:
  - Reporting tool finalised and user-friendly
  - Supporting data on plants and compound classes
  - Full user manual including worked examples
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Composition data

Search for Bio-effect data
Search for bio-effect data, via one or any biomarker and study type.

Search for Composition data
Search for compound names, via individual combination of both compound and food.

Search for Technical data
Search for individual reference details and Nutriova supplementary information on compounds.

2. Create your Bio Composition report
Please add output fields as required.
Selected Output Fields
- Reference no
- Plant
- Part
- Compound
- Average level
- Unit
- Sample year
- Sample plan
- Quality code

Add output fields

Bio Composition data
Click the 'x' icon to delete a search criterion or an output field.

[New search]

1. Search for Bio Composition data
Select a Search type and click a Parameter to add search criteria. Search criteria are limited by the current search criteria. Currently 2,983 data points.

Search type: [Basic, Full]

Parameter | Selected Search Criteria
---|---
Food plant name | Phytosterols
Plant part | Country of origin
Growing condition | SDS
Cooking method | Compound class
Compound name | Analytical method name
Unit | Quality code

VIEW REPORT

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### Data manipulation

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Plant</th>
<th>Fat or oil</th>
<th>Compound</th>
<th>Average level</th>
<th>Unit</th>
<th>Sample year</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>2734</td>
<td>C0082</td>
<td>African oil palm</td>
<td>Campesterol</td>
<td>90</td>
<td>mg/kg FW</td>
<td>1997, 2001</td>
<td>Acceptable</td>
</tr>
<tr>
<td>1334</td>
<td>C0642</td>
<td>African oil palm</td>
<td>beta-Sitosterol</td>
<td>240</td>
<td>mg/kg FW</td>
<td>1997, 2001</td>
<td>Acceptable</td>
</tr>
<tr>
<td>1734</td>
<td>C0642</td>
<td>African oil palm</td>
<td>Stigmasterol</td>
<td>50</td>
<td>mg/kg FW</td>
<td>1997, 2001</td>
<td>Acceptable</td>
</tr>
<tr>
<td>1349</td>
<td>C0029</td>
<td>Almond</td>
<td>Seed oil</td>
<td>Campesterol</td>
<td>55</td>
<td>mg/kg</td>
<td>not available</td>
</tr>
<tr>
<td>1501</td>
<td>C0320</td>
<td>Almond</td>
<td>Seed oil</td>
<td>beta-Sitosterol</td>
<td>207</td>
<td>mg/kg</td>
<td>not available</td>
</tr>
<tr>
<td>1300</td>
<td>C0292</td>
<td>Almond</td>
<td>Seed oil</td>
<td>Stigmasterol</td>
<td>51.7</td>
<td>mg/kg</td>
<td>not available</td>
</tr>
<tr>
<td>9076</td>
<td>C0130</td>
<td>Almond</td>
<td>Seed or kernel</td>
<td>delta-5-Avenasterol</td>
<td>197</td>
<td>mg/kg</td>
<td>not given</td>
</tr>
<tr>
<td>16336</td>
<td>C0642</td>
<td>Almond</td>
<td>Seed or kernel</td>
<td>delta-5-Avenasterol</td>
<td>213</td>
<td>mg/kg FW</td>
<td>1997, 2001</td>
</tr>
<tr>
<td>18334</td>
<td>C0042</td>
<td>Almond</td>
<td>Seed or kernel</td>
<td>Brassicasterol</td>
<td>37</td>
<td>mg/kg FW</td>
<td>1997, 2001</td>
</tr>
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<td>9477</td>
<td>C0310</td>
<td>Almond</td>
<td>Seed or kernel</td>
<td>Campesterol</td>
<td>33</td>
<td>mg/kg</td>
<td>not given</td>
</tr>
</tbody>
</table>

**Phytochemicals:**
- Brassicasterol
- Stigmasterol
- delta-5-Avenasterol
- delta-7-Avenasterol
- Campesterol
- beta-Sitosterol
- Campestanol
- Sitostanol

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Biological effects:

- Cardiovascular health
- Obesity
- Metabolic health
- Type 2 diabetes
- Cancer
- Bone health
- Cognitive function
- Vision

**Biological effects:** cardiovascular health, obesity, metabolic health, type 2 diabetes, cancer, bone health, cognitive function, vision
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Current status

Composition: 436 papers
Bio-effects: 435 papers

Composition: 16684 data points
Bio-effects: 766 data points

Composition: 188 plants
Bio-effects: 70 plants

Composition: 254 compounds
Bio-effects: 144 compounds
- 16 classes
Future Plans

- Possible inclusion of:
  - Tocopherols
  - Chalcones
  - Dihydrochalcones
  - Curcuminoids
  - Phenolic acids (simple)
  - Xanthine alkaloids

- Non-plant bioactive peptides
  - e.g. from dairy, meat, fish

Conclusions

- EuroFIR BASIS is…
  - A unique online database
  - Containing compositional and biological data for major food bioactive compounds
  - Containing additional information e.g. plant, compound class, links
  - Data is easily extractable and manipulated by users
  - Useful to a range of users (e.g. industry, policy makers, researchers)
Acknowledgements

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**Bio-effects evaluators**
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**Thank you**

Further information: www.eurofir.net

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