Collection of food consumption data at EFSA

Summer School “In Silico Methods for Food Safety”
Parma, 14/06/2017

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REGULATION (EC) N° 178/2002

- EFSA “shall search for, collect, collate, analyse and summarise relevant scientific and technical data in the fields within its mission. This shall involve in particular the collection of data relating to food consumption and the exposure of individuals to risks related to the consumption of food”;

- EFSA “shall work in close cooperation with all organisations operating in the field of data collection, including those from applicant countries, third countries or international bodies”.
SUMMARY

Food consumption data in EFSA

EU Menu project

Exposure assessments
“A common database on food consumption would improve the consistency and reliability of exposure assessments carried out by the various EFSA Panels and other experts in Europe”
Representatives of national competent authorities, hearing experts & observers

Platform to:

- Harmonise food consumption data collection methodologies in Europe
- Promote collection of harmonised food consumption data in Europe
- Agree on reporting and data submission formats

Meeting minutes and list of members: https://www.efsa.europa.eu/en/data/networks
The EFSA Comprehensive European food consumption database contains data:

- 24-hour recall or dietary record method
- data collected at individual level
- most recent data within each country
- random sample at national level
- different age classes, from infants to elderly
- special population groups

## MAGNITUDE OF THE COMPREHENSIVE DATABASE

<table>
<thead>
<tr>
<th>Member States</th>
<th>23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dietary surveys</td>
<td>51</td>
</tr>
<tr>
<td>Population groups</td>
<td>128</td>
</tr>
<tr>
<td>Subjects: infants to very elderly</td>
<td>94,532</td>
</tr>
<tr>
<td>Different national food codes</td>
<td>127,912</td>
</tr>
<tr>
<td>Different standard food codes</td>
<td>1,578</td>
</tr>
<tr>
<td>Consumption records</td>
<td>10,470,332</td>
</tr>
</tbody>
</table>

Use of the EFSA Comprehensive European Food Consumption Database in Exposure Assessment:
# Age Classes

<table>
<thead>
<tr>
<th>Age class</th>
<th>Age range (years)</th>
<th>Number of surveys*</th>
<th>Number of countries*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants</td>
<td>0 – 1</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Toddlers</td>
<td>1 – 3</td>
<td>11 (10)</td>
<td>10 (9)</td>
</tr>
<tr>
<td>Children</td>
<td>3 - 10</td>
<td>20 (18)</td>
<td>17 (15)</td>
</tr>
<tr>
<td>Adolescents</td>
<td>10 - 18</td>
<td>20 (17)</td>
<td>17 (14)</td>
</tr>
<tr>
<td>Adults</td>
<td>18 - 65</td>
<td>22 (17)</td>
<td>21 (16)</td>
</tr>
<tr>
<td>Elderly</td>
<td>65 - 75</td>
<td>16 (14)</td>
<td>15 (13)</td>
</tr>
<tr>
<td>Very elderly</td>
<td>&gt; 75</td>
<td>14 (12)</td>
<td>14 (12)</td>
</tr>
<tr>
<td>Special population group</td>
<td></td>
<td>2 (2)</td>
<td>2 (2)</td>
</tr>
</tbody>
</table>

* In parenthesis only surveys with more than one day per subject
Summary food consumption statistics (chronic and acute) available for each country, survey, age group (from infants to elderly) and FoodEx food group (over 1,500) in g/day and g/kg bw per day.
SUMMARY

Food consumption data in EFSA

EU Menu project

Exposure assessments
Examples of methodological differences between different dietary surveys in different countries

- 24 h dietary recall vs. food record
- from 1 to 7 days per subject
- from 28% to 98% response rate
- sample size and sampling design
- week end days not always evenly represented
- seasonality not always covered
- body weight and height measured or estimated
- food classification
Towards more harmonised food consumption data at EU level to address methodological differences in the comprehensive food consumption database
EFSA provides financial support & guidance to Member States

- Aims to collect food consumption data from new dietary surveys following a more harmonised methodology
- in different age classes (from infants to elderly)
- in all 28 Member States (minimum 80,000 subjects in total) + pre-accession countries
- Using methods allowing the comparison of the results

Interaction through EFSA’s network on food consumption data
GUIDANCE OF EFSA

Guidance on the EU Menu methodology

European Food Safety Authority

European Food Safety Authority (EFSA), Parma, Italy

ABSTRACT

The availability of detailed, harmonised and high-quality food consumption data for use in dietary exposure assessments is a long-term objective of EFSA. In 2009, the EFSA guidance on “General principles for the collection of national food consumption data in the view of a pan-European dietary survey” was published, and a pan-European food consumption survey, also known as the “EU Menu”, was launched. Based on the 2009 EFSA guidance, two EU Menu feasibility pilot studies and two methodological projects, EFSA has updated the former guidance document to cover the EU Menu methodology and therefore facilitate the collection of more harmonised food consumption data from all European Union Member States by the year 2020. This guidance has been developed by the EFSA Evidence Management Unit (DATA) and the EU Menu Working Group with Advisory Function, and has been endorsed by the EFSA Network on Food Consumption Data. It provides recommendations for the collection of more harmonised food consumption data among the EU Member States for use in dietary exposure assessments of food-borne hazards and nutrient intake estimations under the remit of EFSA’s scientific panels. Food consumption information should be collected for two non-consecutive days. The 24-hour food diary method, followed by a computer-assisted personal or telephone interview (CAPI/CATI), should be used to collect data from infants and children. For all other age groups, the 24-hour dietary recall CAPI/CATI method should be used. The reported foods should be described in accordance with the EFSA FoodEx2 food classification system. A short food propensity questionnaire should be used to collect information on the consumption of some less frequently eaten foods and the consumption frequencies of food supplements. Information on the weight, height and physical activity levels of participants should also be collected in the survey.

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KEY WORDS

EU Menu, pan-European dietary survey, food consumption, exposure assessment, 24-hour recall, food diary, harmonisation

Methods and procedures described in the present guidance are recommended as suitable for the collection of **harmonised** and **high-quality** food consumption and related data within the EU.

**Other methods could also provide high-quality food consumption data**, but if these are used only in certain countries the level of data harmonisation would be reduced.
MAIN POINTS

- **Children**: dietary record method
- **All other subjects**: 24-hour recall method
- **Two non-consecutive days**
- **Interviewers Nutritionists/Dieticians**
- **Detailed food description** - Composite foods to be broken down to ingredients
- First interview **face to face**, the second can be administered via telephone; Meetings preferably at home
- Use of different **portion-size measurement aids**
- Country-specific, validated **picture books** are recommended and age-appropriate tools
- Actual **measurement** of body weight and height
- Questionnaire to assess **physical activity** levels
- **Food propensity questionnaire** (FPQ)
STUDY ORGANISATION AND PLANNING

- evaluation of the survey plan and procedures by ethics committees
- preparation of the dietary software and country specific databases

- recruitment and training of survey interviewers
- a pilot study (about 5–10 % of the total sample)
Variability in dietary patterns should be considered and clearly described at country levels.

At least 260 participants (130 males and 130 females) per country and age class (from infants to the elderly).

The inclusion of more than the minimum number of subjects in the study is strongly recommended.
The software needs to ensure the collection of high-quality data within the survey.

The food list should be updated regularly so that new foods, recipes and other information reported by the study subjects can be added.
FOOD AS CONSUMED VS. RAW AGRICULTURAL COMMODITIES

Raw Agricultural Commodity (RACs)

Conversion factors

Food as consumed

List of ingredients and proportions

Individual ingredient
## QUANTIFICATION OF COMPOSITE DISHES

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Cooked</th>
<th>Raw</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>210 grams</td>
<td>120 grams</td>
</tr>
<tr>
<td></td>
<td>73 grams</td>
<td>94.5 grams</td>
</tr>
<tr>
<td></td>
<td>7.8 grams</td>
<td>7.8 grams</td>
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<tr>
<td></td>
<td>1.7 grams</td>
<td>2.7 grams</td>
</tr>
<tr>
<td></td>
<td>0.5 grams</td>
<td>0.8 grams</td>
</tr>
<tr>
<td></td>
<td>3 grams</td>
<td>3 grams</td>
</tr>
<tr>
<td></td>
<td>1 gram</td>
<td>1 gram</td>
</tr>
</tbody>
</table>

**Food as consumed:** 297 grams
All foods recorded in the national dietary survey should be classified in accordance with the FoodEx2 food classification system developed by EFSA.

Minimum set of facet descriptors
- Source
- Part-nature
- Sweetening agent
- Fortification
- Qualitative information
- Packaging material
- Process
Minimum set of background information

- Date of the data collection
- Sex and age of the respondent
- Geographical information
- Special conditions (e.g. pregnant, chronic disease, etc.)
- Special diet (e.g. vegetarian, slimming, health conditions)
- Size of household
- Labour status
- Professional status
- Education level
- Physical activity level
- Person provided the answers (in case of children)
Quality assurance plans should be prepared at the country level.

The assessment of the prevalence of misreporting (i.e. under- and over-reporting of dietary energy intakes) should also be performed taking into account the physical activity levels of the subjects.
<table>
<thead>
<tr>
<th>Project started in</th>
<th>Dietary survey on Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>France</td>
<td>France</td>
</tr>
<tr>
<td></td>
<td>Estonia</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>Latvia</td>
<td>Latvia</td>
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<tr>
<td></td>
<td>Netherlands</td>
<td></td>
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<tr>
<td></td>
<td>Portugal</td>
<td>Portugal</td>
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<tr>
<td></td>
<td>Spain</td>
<td>Estonia</td>
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<tr>
<td>2013</td>
<td>Belgium</td>
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<tr>
<td></td>
<td>Cyprus</td>
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<tr>
<td></td>
<td>Greece</td>
<td></td>
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<tr>
<td></td>
<td>Spain</td>
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<tr>
<td>2014</td>
<td>Hungary</td>
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<td></td>
<td>Italy</td>
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<td></td>
<td>Slovenia</td>
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<tr>
<td></td>
<td>Greece</td>
<td>Austria</td>
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<td></td>
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<td>Romania</td>
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<tr>
<td>2015</td>
<td>Poland</td>
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<td></td>
<td>Croatia</td>
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<tr>
<td></td>
<td>Serbia</td>
<td></td>
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<tr>
<td></td>
<td>FYROM</td>
<td>Montenegro</td>
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<tr>
<td>2016</td>
<td></td>
<td>Bosnia &amp; Herzegovina</td>
</tr>
</tbody>
</table>

**Number of dietary surveys**

|       | 16 | 19 |


Food consumption data in EFSA

EU Menu project

Exposure assessments
EXPOSURE ASSESSMENT TO TTX

- Tetrodoxin (TTX) and its analogues have been detected in marine bivalves and gastropods.
- Origin of TTX is associated with bacteria (Proteobacteria) and are found in several species and in different tissues.

- Oysters
- Scallops
- Whelk
- Clams
- Mussels
- Razor clams
- Winkles
EXPOSURE ASSESSMENT

Tetrodoxin (TTX)

Chemical Occurrence

Exposure Assessment

Food Terminology

Food consumption
Analytical results from marine bivalves (clams, cockles, mussels, oysters, scallops, razor clams) from 1677 samples from 2006-2016 from UK, NL and GR were submitted to EFSA (92% of these non-detects).

400 g portion of shellfish meat (Standard large portion estimated in 2008 based on limited consumption data and used in several opinions)

EFSA Comprehensive European Food Consumption Database
Probabilistic assessment using current occurrence data + consumption data of 29 surveys of EFSA Comprehensive Database

Acute exposure was assessed for each reporting day by multiplying the total consumption amount for each type of bivalve (e.g. oysters) by one occurrence level randomly drawn among the individual results available for that type
Consumption of bivalves was reported in 29 surveys from 17 countries.

95th percentage consumption of shellfish meat ranged from 5.6 to 180 g/day (0.07 to 3.27 g/kg bw per day).

- estimated based on the 7 population groups in 5 surveys with at least 60 consumption days per population group.

Based on the occurrence data submitted to EFSA and reported consumption days only, average and P95 exposures of 0.00–0.09 and 0.00–0.03 μg/kg bw, respectively, were calculated.
Risks for public health related to the presence of tetrodotoxin (TTX) and TTX analogues in marine bivalves and gastropods

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Questions?

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