



Collection of food consumption data at EFSA

Summer School "In Silico Methods for Food Safety"

Parma, 14/06/2017

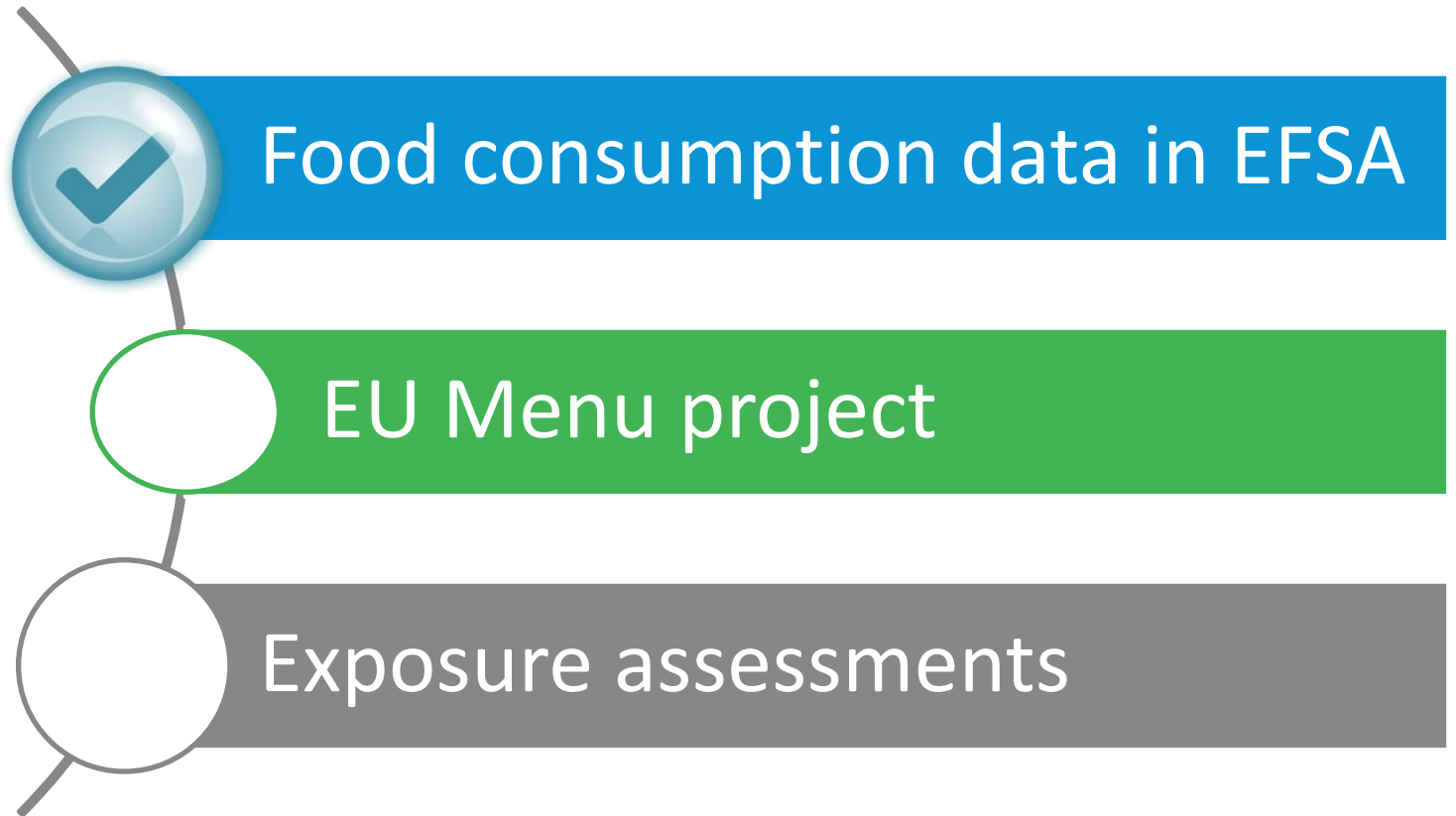
Ioannidou Sofia

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



EFSA SCIENTIFIC COLLOQUIUM



“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”

NETWORK ON FOOD CONSUMPTION DATA COLLECTION



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>

EFSA COMPREHENSIVE EUROPEAN FOOD CONSUMPTION DATABASE

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



The screenshot shows the EFSA website interface. At the top left is the EFSA logo. To the right, there is a 'Calendar' icon, the language 'english (en)', and a search bar labeled 'Search site'. Below the logo is a navigation menu with items: 'About', 'News', 'Discover', 'Science', 'Publications', 'Applications', and 'Engage'. A secondary navigation bar contains 'Home', 'Science', 'Data collection and analysis', 'Food consumption', and 'Comprehensive database'. The main content area features a sidebar on the left under 'Data collection and analysis' with a tree view where 'Comprehensive database' is selected. The main text area is titled 'The EFSA Comprehensive European Food Consumption Database' and contains a paragraph describing the database's role in risk assessment. A 'See also' box on the right contains a link to 'The EFSA DWH access rules'.

<https://www.efsa.europa.eu/en/food-consumption/comprehensive-database>

MAGNITUDE OF THE COMPREHENSIVE DATABASE

Member States	23
Dietary surveys	51
Population groups	128
Subjects: infants to very elderly	94,532
Different national food codes	127,912
Different standard food codes	1,578
Consumption records	10,470,332

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

<https://www.efsa.europa.eu/en/efsajournal/pub/2097>

AGE CLASSES









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

* In parenthesis only surveys with more than one day per subject









SUMMARY STATISTICS

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.

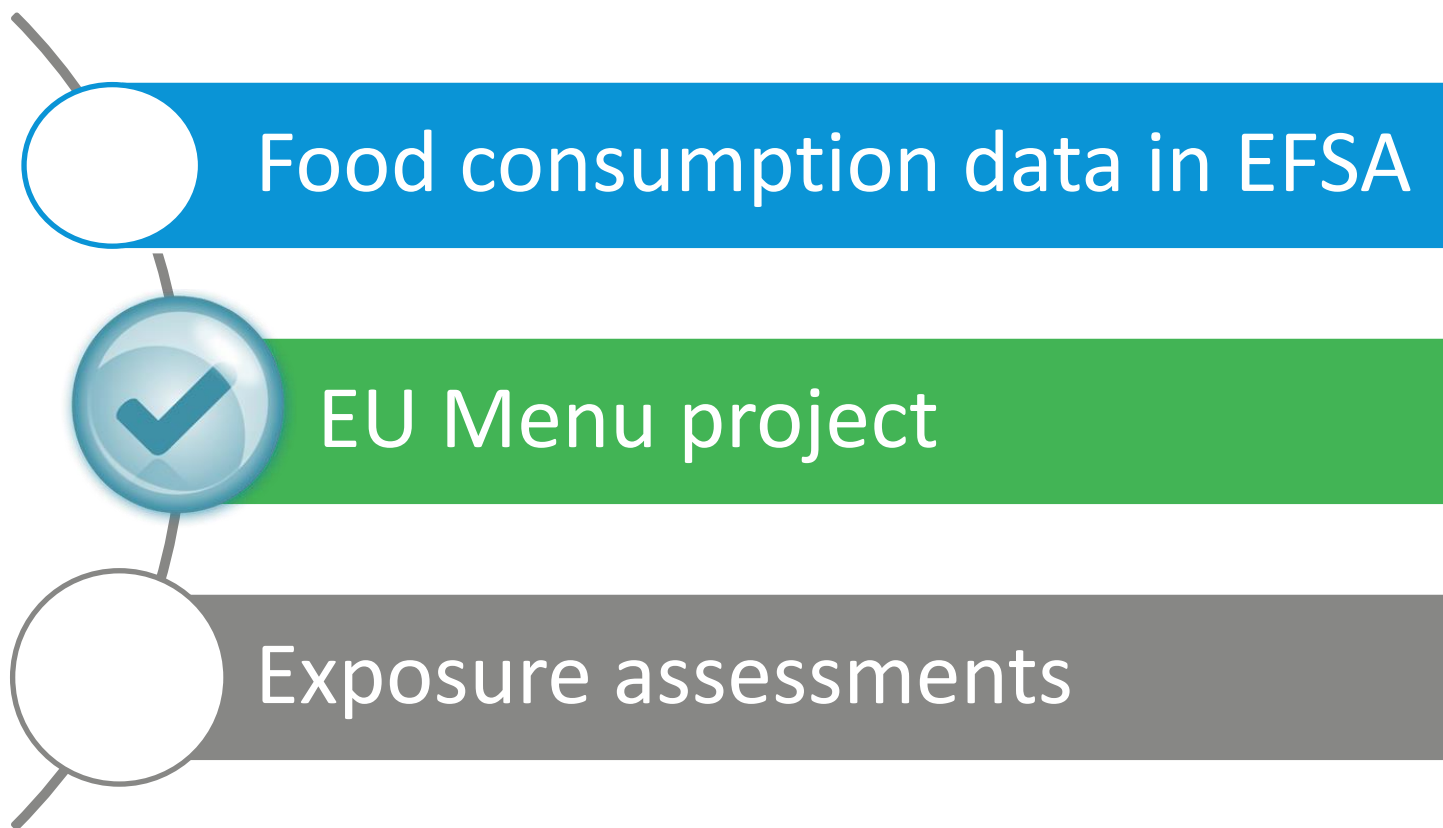
Chronic food consumption statistics

Intake	All subjects	Consumers only
grams per day* (g/day)	 	 
grams per day per kilogram of body weight* (g/kg bw per day)	 	 

Acute food consumption statistics

Intake	All days	Consuming days only
grams per day* (g/day)	 	 
grams per day per kilogram of body weight* (g/kg bw per day)	 	 

SUMMARY



DIETARY SURVEY METHODOLOGY

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

WHAT'S ON THE MENU IN EUROPE



Towards **more harmonised** food consumption data at EU level to address methodological differences in the comprehensive food consumption database

EU MENU PROJECT (2011-2022)

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 methodology¹

European Food Safety Authority^{2,3}

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

SCOPE OF THE GUIDANCE

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

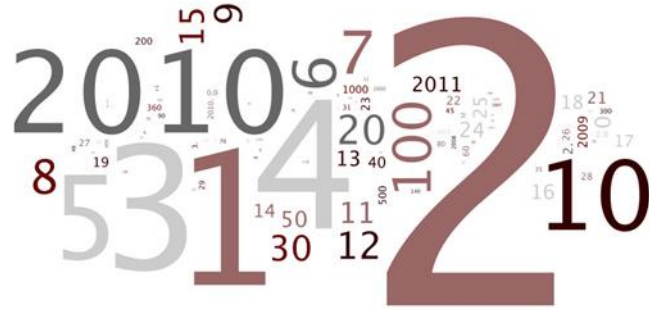
- **Children**: dietary record method
- **All other subjects**: 24-hour recall method
- **Two** non-consecutive **days**
- **Interviewers Nutritionists/Dieticians**
- **Detailed food description** - Composite foods to be broken down to ingredients
- First interview **face to face**, the second can be 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)



SAMPLE SIZE



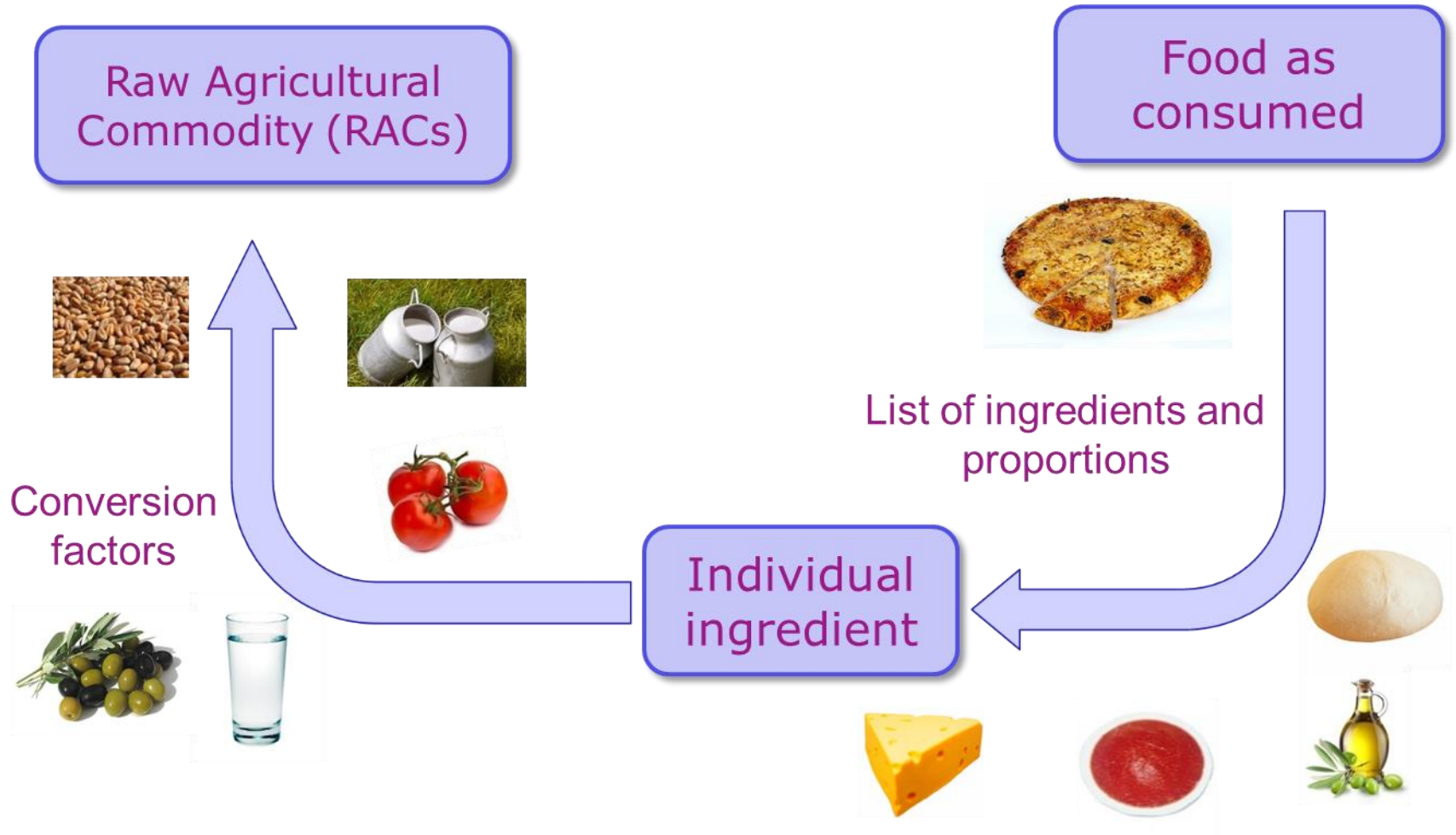
- Variability in dietary patterns should be considered and clearly described at country levels
- **At least 260 participants** (130 males and 130 females) **per country and age class** (from infants to the elderly).
- The inclusion of **more than the minimum number of subjects** in the study is **strongly recommended**

DIETARY SOFTWARE



- 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










QUANTIFICATION OF COMPOSITE DISHES

Food as consumed

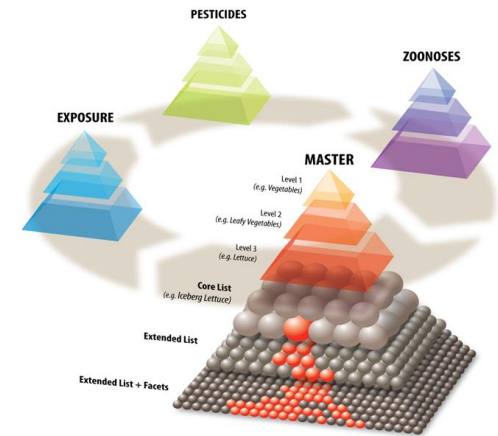


297 grams

Cooked	Ingredients	Raw
210 grams		120 grams
73 grams		94.5 grams
7.8 grams		7.8 grams
1.7 grams		2.7 grams
0.5 grams		0.8 grams
3 grams		3 grams
1 gram		1 gram

FOOD DESCRIPTION

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

NON-DIETARY INFORMATION

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

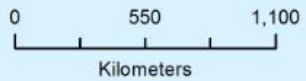


- Quality assurance plans should be prepared at the country level
- The assessment of the prevalence of misreporting (i.e. under- and over-reporting of dietary energy intakes) should also be performed taking into account the physical activity levels of the subjects

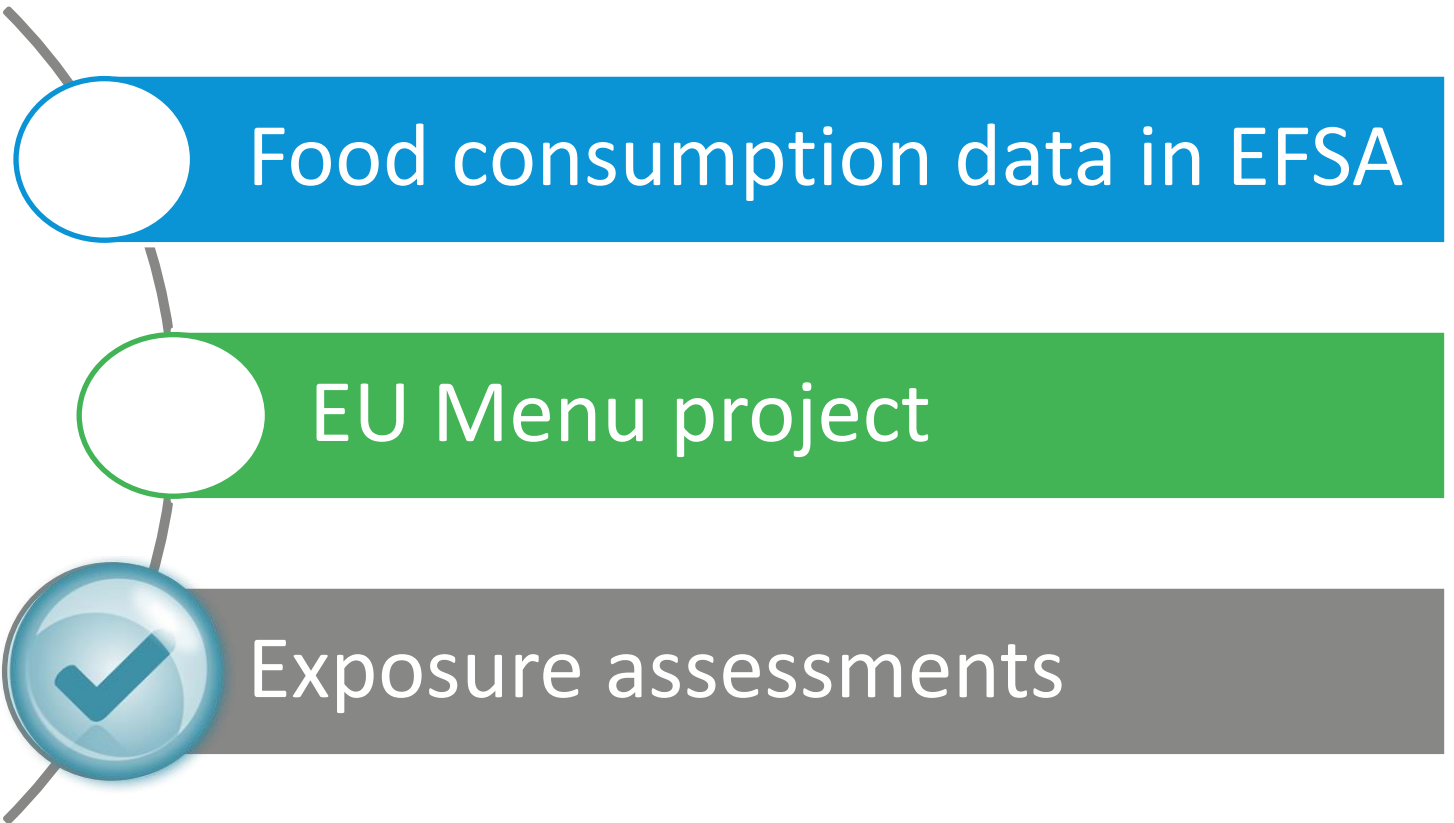
Project started in	Dietary survey on	
	Children	Adults
2011	France	France
	Estonia	
2012	Latvia	Latvia
	Netherlands	Netherlands
	Portugal	Portugal
	Spain	Estonia
	Belgium	Belgium
2013	Cyprus	Cyprus
		Greece
		Spain
2014	Hungary	Hungary
	Italy	Italy
	Slovenia	Slovenia
	Greece	Austria
		Romania
2015		Finland
	Poland	Poland
2016	Croatia	
	Serbia	Serbia
	FYROM	Montenegro
		Bosnia & Herzegovina
Number of dietary surveys	16	19

EFSA Support to the EU Menu

-  EU Member States
-  Pre-accession Countries



SUMMARY



EXPOSURE ASSESSMENT TO TTX

- Tetrodotoxin (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



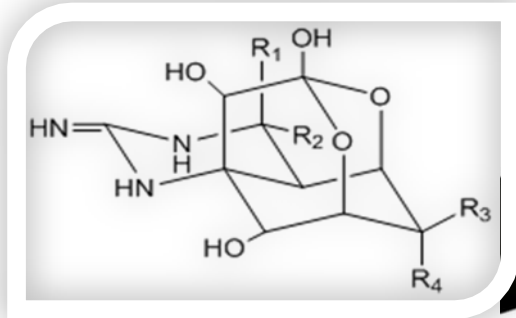
Razor clams



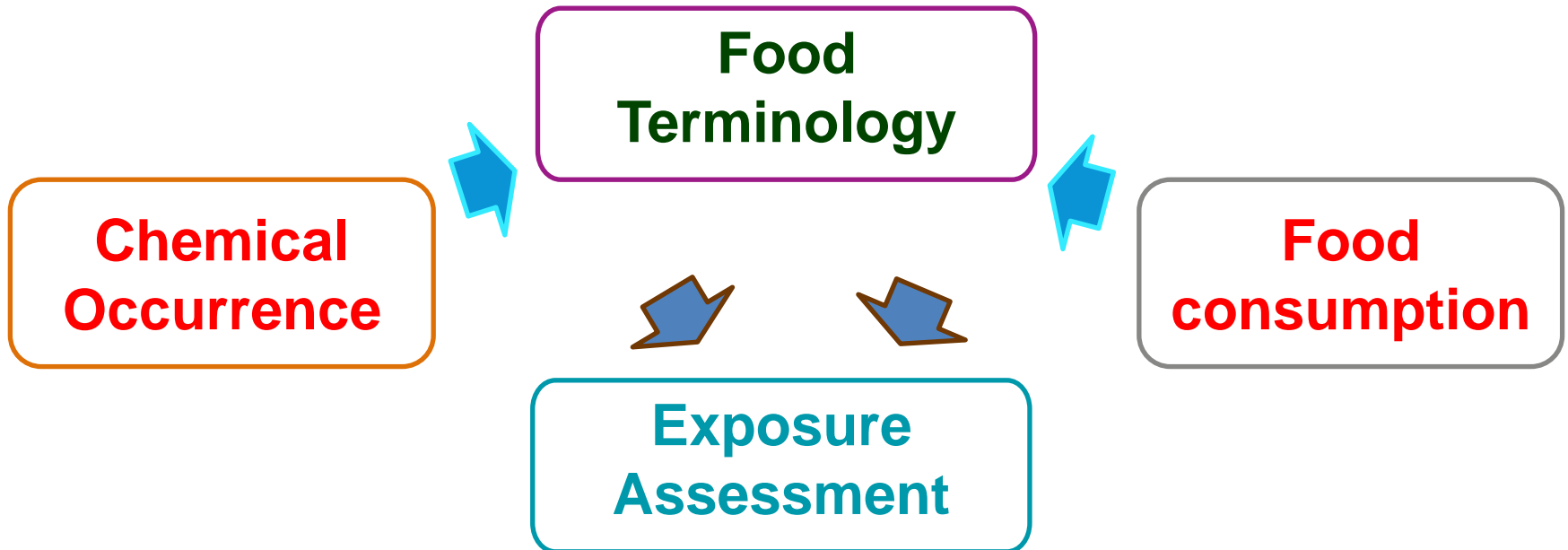
Winkles



EXPOSURE ASSESSMENT



Tetrodotoxin (TTX)



OCCURRENCE & CONSUMPTION DATA USED

- **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**

EXPOSURE ASSESSMENT

- 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

RESULTS OF EXPOSURE ASSESSMENT

- 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

 tetrodotoxin, marine bivalves, marine gastropods, human health risk

First published in the EFSA Journal:  20 April 2017


Adopted:  15 March 2017

Type:  Opinion of the Scientific Committee/Scientific Panel

Subject area

 **Chemical contaminants** >



Read it on the Wiley Online Library: [Article](#)  | [PDF](#) 

THANK YOU!

Questions?



Sofia Ioannidou

Sofia.ioannidou@efsa.europa.eu