



Food Consumption Data Sources

Day 2 – 27 February, 2023

15:00 – 15:45

Chemical risk assessment

Exposure to contaminant from dietary source(s) is compared to reference “safe” value to assess risk

$$\text{Estimated daily intake of contaminant} = \frac{\text{Daily food intake} \times \text{Concentration in food}}{\text{Body weight}}$$

- ❑ EDI (*ng/kg bw per day*)
- ❑ Daily food intake (*kg/day*) → consumption surveys or surrogates
- ❑ Concentration in food (*ng/kg*)
- ❑ Body weight (*kg*)



Low contamination can have health implications if high consumption

National food consumption survey

☐ “Gold standard”

- Large sample size = representative of population
- Sufficient respondent information for stratification (per age, gender, geographical area, etc.)
- Multiple food sources (24h recall / food frequency questionnaire)
- Conducted according to international guidelines
- Raw data suitable for distribution fitting, but hard to access, extract and analyse

☐ Ex. Canada CCHS-2015; EFSA (2020) aflatoxins risk assessment



Egypt

- ❑ National food consumption survey implemented by the Nutrition Institute (1981 & 1998)

Underreporting of Food Intake by Dietary Recall Is Not Universal: A Comparison of Data from Egyptian and American Women¹

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- ❑ Large food consumption survey conducted by the Agricultural Research Center (1994)

Public Health Nutrition: 5(1A), 141-148

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The nutrition transition in Egypt: obesity, undernutrition and the food consumption context

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Targeted food consumption survey

□ 2nd best choice

- Much narrower scope (ex. specific food item, specific population group)
- Allows for stratification
- EFSA and other guidelines available
- Requires planning and field work
- Direct access to raw data (fitted to distributions, reused for other assessments)

Risk of exposure to aflatoxin B₁, ochratoxin A, and fumonisin B₁ from spices used routinely in Lebanese cooking

Manar Al Ayoubi ^a, Michele Solfrizzo ^b, Lucia Gambacorta ^b, Ian Watson ^c, Nada El Darra ^{a,*}

Risk assessment supporting the establishment of a maximum residue limit for ractopamine in beef liver, applicable in the Arab Republic of Egypt

Samuel Benrejeb Godefroy^{1,2}  | Silvia Dominguez¹ | Mark Feeley² | Jérémie Théolier¹ | Sohair A. Gad Alla⁴ | Alex Samel³ | Khaled Shedeed³ | Eman Helmy⁴ | Hussein Mansour⁴

Exposure Assessment and Risk Characterization of Aflatoxin M1 Intake through Consumption of Milk and Yoghurt by Student Population in Serbia and Greece

Bozidar Udovicki ¹ , Ilija Djekic ¹ , Eleni P. Kalogianni ² and Andreja Rajkovic ^{1,3,*}

Food consumption per capita

❑ Sources: national consumption per year, food sector reports

❑ Ex. AFB1 in rice in UAE (Alwan et al., 2022)

The average consumption of rice in the UAE (g/day) was assessed using the total consumption of rice in the country in 2021, and the number of the population, in addition to the average weight of adults in that year. The total consumption of rice in the UAE in 2021 was 800,000 MT, while the size of the population in the UAE in 2021 was estimated to be 9.99 million people [20], and the average weight of adults in the UAE in 2021 was 76 kg [21].

❑ Egypt average national consumption from *Egyptian Central Agency for Public Mobilization and Statistics (CAPMAS), 2018. Annual Report for Production, Foreign Trade and Available for Consumption of the Most Important Industrial Goods*

First risk assessment report of aflatoxins in Egyptian tahini

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❑ Point value only (e.g., mean)

❑ No specific population group

Food available per capita: FAO food balance sheets

- ❑ Ex. Egypt, wheat and wheat products, 2020: 147.94 kg/capita/year (405 g/capita/day)
- ❑ Amount of food **available** for consumption divided by population
- ❑ Food categories, few items
- ❑ Point value only (e.g., mean)
- ❑ No specific population group

The screenshot displays the FAO food balance sheets interface with four filter panels, each with a red circle around its title and a red arrow pointing to the selected option:

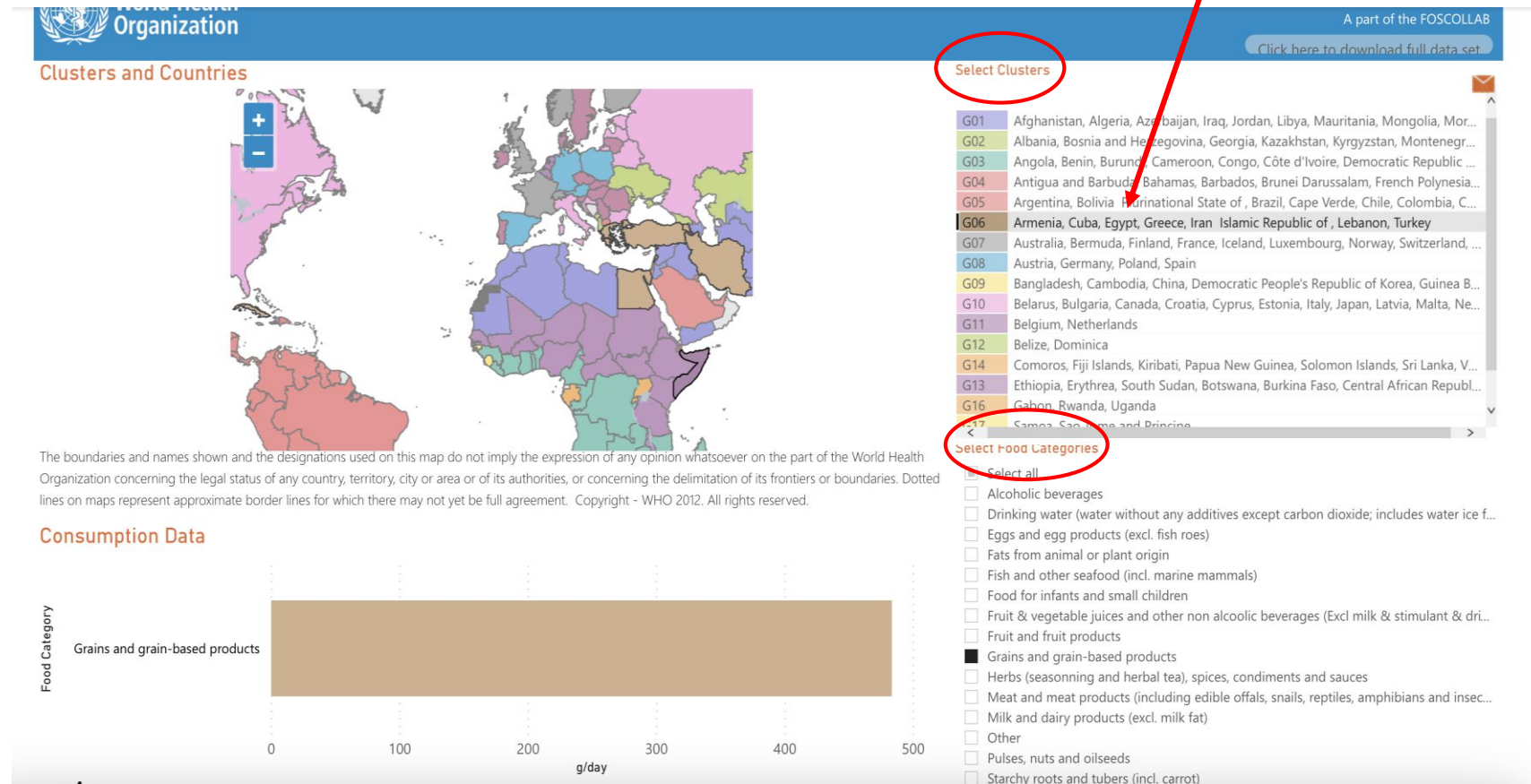
- COUNTRIES**: Filter results e.g. afghanistan. Selected: Egypt.
- ELEMENTS**: Filter results e.g. total population - both sexes. Selected: Food, Food supply quantity (kg/capita/yr).
- ITEMS**: Filter results e.g. population. Selected: Wheat and products.
- YEARS**: Filter results e.g. 2020. Selected: 2020.

At the bottom, there are settings for Output Type (Table selected), File Type (CSV selected), Thousand Separator in 'Show Data' (None selected), and Output Formatting Options (Flags, Notes, Codes, Units, Null Values).

<https://www.fao.org/faostat/en/#data/FBS>

Food available per capita: GEMS food cluster diets

- ❑ Amount of food **available** for consumption divided by population
- ❑ Not necessarily country specific
- ❑ Only food categories, no items
- ❑ Ex. Egypt's cluster, 2013, grains and grain-based products: 483.7 g per capita/day
- ❑ Point value only (e.g., mean)
- ❑ No specific population group



<https://www.who.int/data/gho/samples/food-cluster-diets>

Other sources

- ❑ Consumption data from another country in the region
- ❑ Food labels / nutritional recommendations (e.g., infant formula)



Surrogate: food expenditure data

Convert amount **spent (\$)** in food per household in a given period into amount **consumed (g)** per day per “adult male equivalent”

Household budget survey (raw data)

- Composition of each HH (number of individuals, age, gender)
- Amount spent in each food item per HH (not mean)

Energy requirements table per age & gender

Country-specific food price database

Yield and edible factors (for specific foods, if applicable)

Regional or country-specific food composition table (kcal/food)

Laborious

Dietary exposure to pesticide residues in Yaoundé:
The Cameroonian total diet study

M.-M. Gimou , U. R. Charrondiere , J.-C. Leblanc & R. Pouillot



Egypt

- ❑ Egyptian Household Income, Expenditure, and Consumption Survey (EHIECS) 2009/2010, conducted by Central Agency for Public Mobilisation and Statistics (CAPMAS)



Modeling options

- ❑ Like for concentration
- ❑ If access to raw data (food consumption, or estimated from expenditure): parametric modeling
- ❑ If access to point values (min, mean, max):
 - Triangular distribution, or
 - 3 scenarios



