

INPUT DATA FOR FOOD ENZYME INTAKE MODEL



ENZYMES IN FOOD PRODUCTION

- An ancient story started with ingredients containing enzymes.
 - Yeast Wine, beer and bread
 - Abomasum of lactating ruminants Cheese
- Long time practice to extract the biocatalysts for processing raw materials.
 - Amylase, cellulase, lactase, pectinase, proteases, lipases, invertase, isomerase, oxidase, polymerase, nuclease, etc.
 - Considered as a type of food additives by WHO/FAO still today and in the EU until Reg. (EC) 1332/2008.
- Expansion of food enzymes in food production in the past 40 years
 - Driven by advancement in protein technology and increasing demand for processed foods
 - EFSA centralises the safety assessment of food enzymes to European consumers.



FOOD ENZYME SAFETY ASSESSMENT PARADIGM

Production organism characterisation

- · Taxonomy & intrinsic hazard
- Genetic modification & introduced hazard

Manufacturing process

- · Raw materials,
- Fermentation/extraction, purification, concentration, etc.

Food enzyme characterisation

- Biochemical composition (TOS)
- Chemical reaction, pH and Temp, stability, etc.
- Chemical & microbiological purity

Toxicological tests

- Suitability of the test item
- · In vitro bacterial reverse mutation test
- In vitro mammalian chromosomal aberration test
- Repeated dose 90-day oral toxicity study in rodents

Allergenicity

- The enzyme protein
- Compounds from the source organism
- Compounds from the manufacturing process

Intended conditions of use

- Food manufacturing processes
- Transfer or removal of FE-TOS in final foods or ingredients

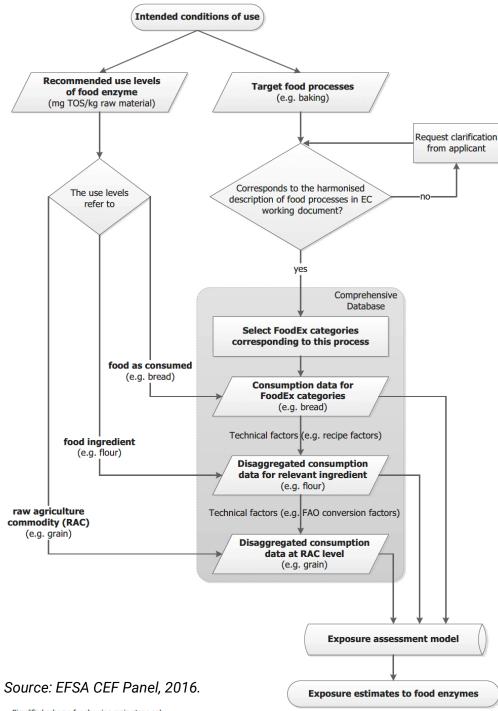
Dietary exposure

- Is calculation needed?
- If yes, use maximum use level for all dossiers

MoE

EFSA safety conclusion

Toxicological or allergenical concern to use the enzyme under the intended conditions of use?



FOOD ENZYME EXPOSURE ASSESSMENT APPROACH

Actual consumption data-based approach, specific to the intended uses

Permits "drill down" (e.g. for refinement purposes)

- Transfer or removal of food enzyme residue in foods
- Inclusion or exclusion food groups
- Aggregation or disaggregation by needs

Input data:

- Intended use (prone to interpretation)
- Use level (given in dossiers)
- Technical factors (scattered)
- EFSA Comprehensive Consumption database (available)

INFO SESSION PROGRAM

9:00	Welcome	
9:10	Session 1 - Food manufacturing processes in which food enzymes are (or may be) applied	
	 Categorization of the processes Food manufacturing processes in the food enzyme Union list AMFEP perspective 	Prof. Holger Zorn Dr. Catherine Evrevin Dr. Mariella Kuilman
10:45 - 1	1:15 Coffee break	·
11:15	Session 2 - Process-specific technical factors and double counting	
	 Technical factors used in estimation AMFEP concerns about double counting Mitigation of double counting 	Dr. Yi Liu Dr. Dorthe Helnov Dr. Daniele Cavanna & Dr. Giulio di Piazza
12:45 - 1	4:00 Lunch break	·
14:00	Session 3 – FEIM tools	
	 Single process calculators Translation from FoodEx1 to FoodEx2 Development of the web tool 	Dr. Rita Ferreira de Sousa Dr. Francesco Pesce & Dr. Kyriaki Apergi Dr. Giulio di Piazza
15:30 - 1	6:00 Tea break	
16:00	Panel discussion 1 – Food manufacturing processes	
16 :40	Panel discussion 2 – FEIM	
17:20	Concluding remarks	