MITIGATION OF DOUBLE COUNTING

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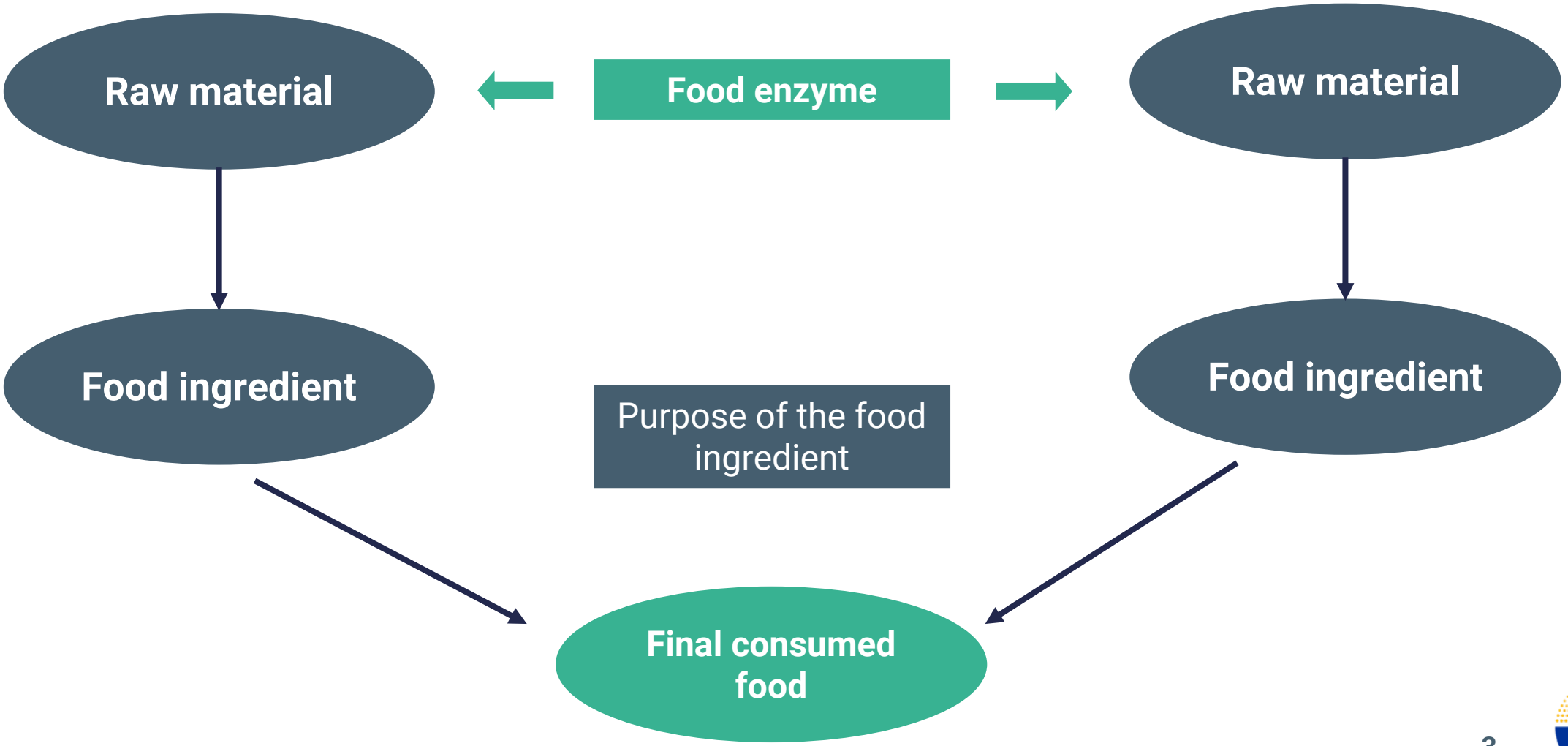
EUROPEAN FOOD SAFETY AUTHORITY

CONCEPT OF DOUBLE COUNTING

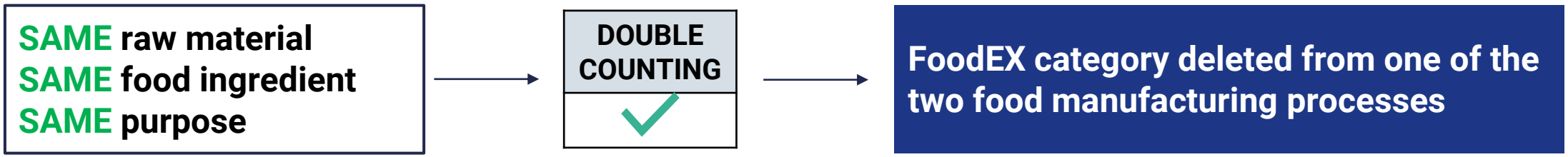
Food enzyme intake via a certain food is counted multiple times

DOUBLE COUNTING OF ENZYME EXPOSURE WHEN AN ENZYME IS USED IN SEVERAL PROCESSES FOR THE SAME ACTIVITY AND IS ENDING UP IN THE SAME FINAL FOOD

DOUBLE COUNTING IN TWO FOOD MANUFACTURING PROCESSES



TYPES OF DOUBLE COUNTING AND MITIGATION ACTIVITY



EXAMPLES OF DOUBLE COUNTING MITIGATION

Call for Data 7th Call

Lactose degradation in milk and dairy products

44	A.08.06.001	Yoghurt, cow milk, plain
45	A.08.06.002	Yoghurt, cow milk, with fruit
46	A.08.06.003	Yoghurt, sheep milk
47	A.08.06.004	Yoghurt, goat milk
48	A.08.06.005	Sour milk

Call for Data 12th Call

Milk processing to improve fermented milk products properties

11	A.08.06.001	Yoghurt, cow milk, plain
12	A.08.06.002	Yoghurt, cow milk, with fruit
13	A.08.06.003	Yoghurt, sheep milk
14	A.08.06.004	Yoghurt, goat milk
15	A.08.06.005	Sour milk

EXAMPLES OF DOUBLE COUNTING MITIGATION - ACTION

Call for Data 7th Call

Lactose degradation in milk and dairy products

44	A.08.06.001	Yoghurt, [illegible]ilk, plain
45	A.08.06.002	[illegible]w milk, with fruit
46	A.08.06.003	[illegible] sheep milk
47	A.08.06.004	[illegible]t milk
48	A.08.06.005	Sour milk

Production of lactose-reduced milk

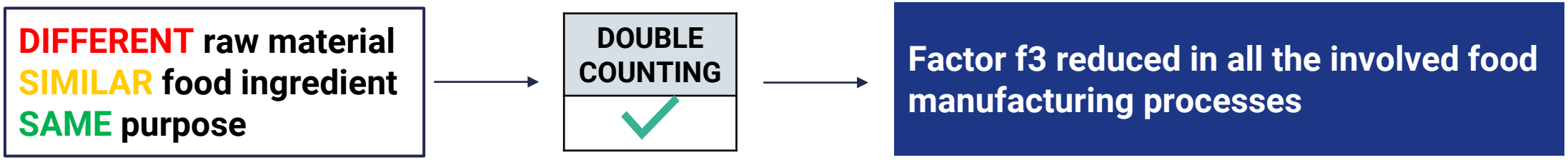
Call for Data 12th Call

Milk processing to improve fermented milk products properties

11	A.08.06.001	Yoghurt, cow milk, plain
12	A.08.06.002	Yoghurt, cow milk, with fruit
13	A.08.06.003	Yoghurt, sheep milk
14	A.08.06.004	Yoghurt, goat milk
15	A.08.06.005	Sour milk

Production of fermented dairy products

TYPES OF DOUBLE COUNTING AND MITIGATION ACTIVITY



EXAMPLES OF DOUBLE COUNTING MITIGATION

Call for Data
22nd Call
Protein extracts processing

Hydrolysed proteins from different sources (i.e., animal, plant, dairy) could be used alternately for the same purpose in the same food products

One single food manufacturing process for animal and vegetable protein hydrolysates could lead to double counting (with other processes) and to a high overestimation of the dietary exposure

EXAMPLES OF DOUBLE COUNTING MITIGATION - ACTION

Call for Data
22nd Call

Protein extracts processing

- Production of protein hydrolysates from meat and fish protein isolates
- Production of protein hydrolysates from plants

REDUCTION OF THE F3 FACTOR IN ALL THE INVOLVED FOOD MANUFACTURING PROCESSES

Production of whey protein hydrolysates

FoodEx1 Code	Name	f3
A.18.01	Food for weight reduction	0.40

Production of protein hydrolysates from meat and fish protein isolates

FoodEx1 Code	Name	f3
A.18.01	Food for weight reduction	0.36

Production of protein hydrolysates from plants

FoodEx1 Code	Name	f3
A.18.01	Food for weight reduction	0.18

Sum of the f3 factors < 1

EXAMPLE OF WHAT IS NOT A DOUBLE COUNTING

DIFFERENT raw material
SAME food ingredient
SAME purpose

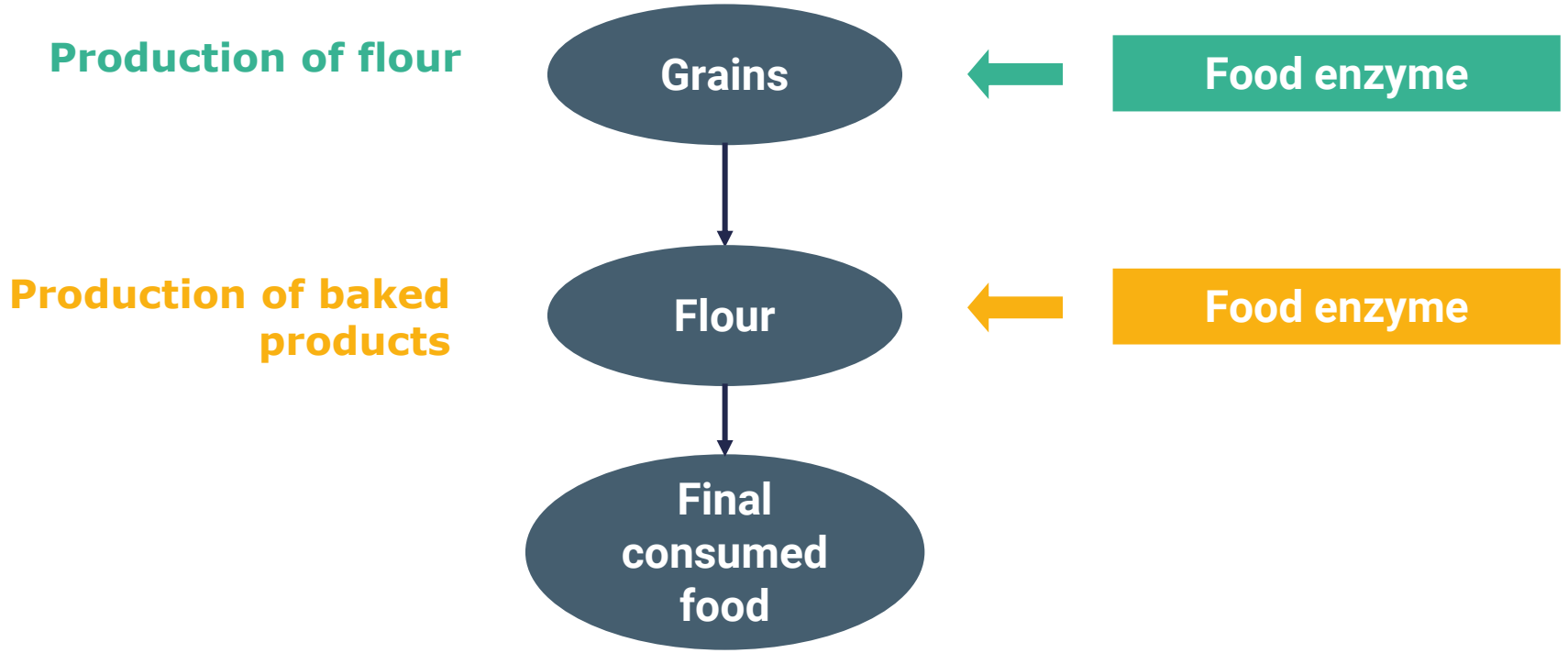
→

DOUBLE COUNTING

→

The same food enzyme could be added to two different raw materials.
Both the additions contribute to the final exposure to this food enzyme

EXAMPLE OF WHAT IS NOT A DOUBLE COUNTING



The same food enzyme could be added to two different raw materials.
Both the additions contribute to the final exposure to this food enzyme

Sum of the f3 factors > 1

TYPES OF DOUBLE COUNTING AND MITIGATION ACTIVITY

SAME raw material SAME food ingredient SAME purpose	→ DOUBLE COUNTING ✓ →	FoodEX category deleted from one of the two food manufacturing processes
DIFFERENT raw material SIMILAR food ingredient SAME purpose	→ DOUBLE COUNTING ✓ →	Factor f3 reduced in all the involved food manufacturing processes
DIFFERENT raw material SAME food ingredient SAME purpose	→ DOUBLE COUNTING ✗ →	The same food enzyme could be added to two different raw materials. Both the additions contribute to the final exposure to this food enzyme

ADDITIONAL MITIGATION ACTIVITIES

1. Some FoodEx categories have been moved from one food manufacturing process to another
2. F3 factors have been reduced:

    2A. When two food ingredients could be added alternatively to the same final food.

    2B. After a refined Mintel's search.

3. For an enzyme intended for multiple food processes, the f2 factor is further mathematically corrected. Detailed are provided in slides 19-20

ADDITIONAL MITIGATION ACTIVITIES – TYPE 1

Call for Data
1st Call

Baking processes

A.01.03.001.001	Wheat flour, brown
A.01.03.001.002	Wheat flour, Durum
A.01.03.001.003	Wheat flour, white
A.01.03.001.004	Wheat flour, wholemeal
A.01.03.001.005	Graham flour
A.01.03.001.006	Wheat flour, gluten free

Flour is the raw material of this food manufacturing process

ADDITIONAL MITIGATION ACTIVITIES – TYPE 1

Call for Data 1st Call

Baking processes

A.01.03.001.001	Wheat flour, brown
A.01.03.001.002	Wheat flour, Durum
A.01.03.001.003	Wheat flour, white
A.01.03.001.004	Wheat flour, wholemeal
A.01.03.001.005	Graham flour
A.01.03.001.006	Wheat flour, gluten free

Flour is the raw material of this food manufacturing process

Call for Data 25th Call

Processing of grains for the production of flour

Flour is the final product of this food manufacturing process

ADDITIONAL MITIGATION ACTIVITIES – TYPE 1

Call for Data 1st Call

Baking processes

Call for Data 25th Call

Processing of grains for the production of flour

A.01.03.001.001	Wheat flour, brown
A.01.03.001.002	Wheat flour, Durum
A.01.03.001.003	Wheat flour, white
A.01.03.001.004	Wheat flour, wholemeal
A.01.03.001.005	Graham flour
A.01.03.001.006	Wheat flour, gluten free

Flour is the raw material of this food manufacturing process

Flour is the final product of this food manufacturing process

ADDITIONAL MITIGATION ACTIVITIES – TYPE 1

Call for Data
1st Call

Baking processes

Call for Data
25th Call

Processing of grains for the production of flour

A.01.03.001.001	Wheat flour, brown
A.01.03.001.002	Wheat flour, Durum
A.01.03.001.003	Wheat flour, white
A.01.03.001.004	Wheat flour, wholemeal
A.01.03.001.005	Graham flour
A.01.03.001.006	Wheat flour, gluten free

Production of baked products

Production of flour

ADDITIONAL MITIGATION ACTIVITIES – TYPE 2A

f3 factors have been reduced for some foods in some food manufacturing processes

Production of wine and wine vinegar

Call-for-data

FoodEX1 Code	Name	f3
A.19.11.005	Prepared rice salad	1

Today

FoodEX1 Code	Name	f3
A.19.11.005	Prepared rice salad	0.75

Production of non-wine vinegar

Call-for-data

FoodEX1 Code	Name	f3
A.19.11.005	Prepared rice salad	1

Today

FoodEX1 Code	Name	f3
A.19.11.005	Prepared rice salad	0.25

ADDITIONAL MITIGATION ACTIVITIES – TYPE 2B

Some f3 factors have been reduced after a refined search

Production of wine and wine vinegar

Call-for-data

FoodEX1 Code	Name	f3
A.19.10.005	Fish soup	1

Today

FoodEX1 Code	Name	f3
A.19.10.005	Fish soup	0.30

Processing of eggs and egg products

Call-for-data

FoodEX1 Code	Name	f3
A.01.07.001.038	Apple strudel	1

Today

FoodEX1 Code	Name	f3
A.01.07.001.038	Apple strudel	0.50

ADDITIONAL MITIGATION ACTIVITIES – TYPE 3

When the food enzyme is used in multiple food manufacturing processes, to address the overestimating F2 factor for each single process, an adjusted F2 factor is used.

- It allows the sum of F2 factors to be always less than 1 (representing the 100% of ingredients composition of the food).
- Also, it has neglectable impact for small amount ingredients.

The F2 factors have been adjusted by this factor:

$$\frac{1-\prod_i\left(1-F2_{process_i}\right)}{\sum_i F2_{process_i}}$$

Here some example: →

F2 process1	F2 process2	Sum	F2 process1 adjusted	F2 process2 adjusted	Sum adjusted
0.01	0.01	0.02	0.00995	0.00995	0.0199
0.1	0.1	0.2	0.09500	0.09500	0.19
0.2	0.4	0.6	0.17333	0.34667	0.52
0.5	0.1	0.6	0.45833	0.09167	0.55
0.5	0.5	1	0.37500	0.37500	0.75
0.6	0.7	1.3	0.40615	0.47385	0.88
0.9	0.9	1.8	0.49500	0.49500	0.99

ADDITIONAL MITIGATION ACTIVITIES – TYPE 3

Here some real case examples:

FoodEX1 Code	Name	Process	F1	F2	F2 adjusted	F3
A.08.08.004	Cheese, processed spreadable	Whey processing	10	0.03	0.029126	0.17
A.08.08.004	Cheese, processed spreadable	Milk processing for the hydrolysis of lactose	2	1	0.970874	0.1
A.01.07.001.004	Cheese cream cake	Milk processing for the hydrolysis of lactose	8	0.3	0.261858	0.01
A.01.07.001.004	Cheese cream cake	Milk processing for production of fermented milk products	5	0.17	0.148386	0.23
A.01.07.001.004	Cheese cream cake	Whey processing	10	0.03	0.026186	1
A.16.08.003	Cream sauce	Milk processing for production of fermented milk products	1.25	0.08	0.079289	0.36
A.16.08.003	Cream sauce	Whey processing	10	0.01	0.009911	0.05

FINAL REMARKS

- The presence of the same foods in more than one food manufacturing processes does not bring automatically to a double counting.
- The F3 has been reduced to be smaller than 1 in sum at the input level when needed.
- The sum of F2 is always less than 1, by mathematical adjustment.

THANK YOU VERY MUCH FOR YOUR ATTENTION

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