

International Conference on Practical Nutrition 2012
MiCo - Milano Congressi
March 14th and 15th, 2012

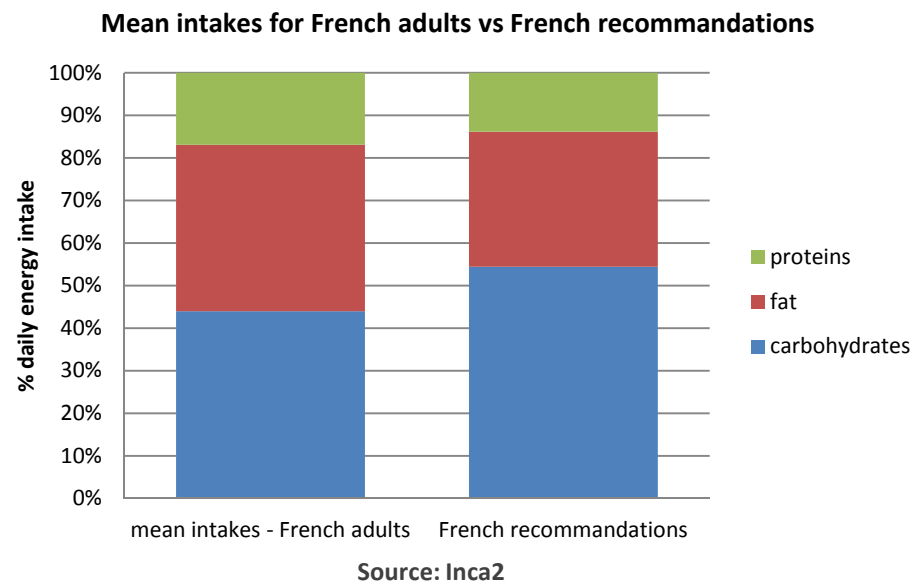
**To what extent the improvement of nutritional
quality of foods
contribute to public health goals?**

Session: “Critical Nutrients: new evidences for health and food industry proposals”

Pierre Combris, Raffaella Goglia, Marion Henini, Louis Georges Soler, **Marine Spiteri**
INRA, UR1303 ALISS
F-94205 Ivry-sur-Seine, France

BACKGROUND

Many chronic diseases linked to food consumption



Several strategies for improving dietary practices can be introduced by health policy makers:

- the implementation of a "nutritional-tax"
- the implementation of a mandatory nutritional label
- the product reformulation

BACKGROUND

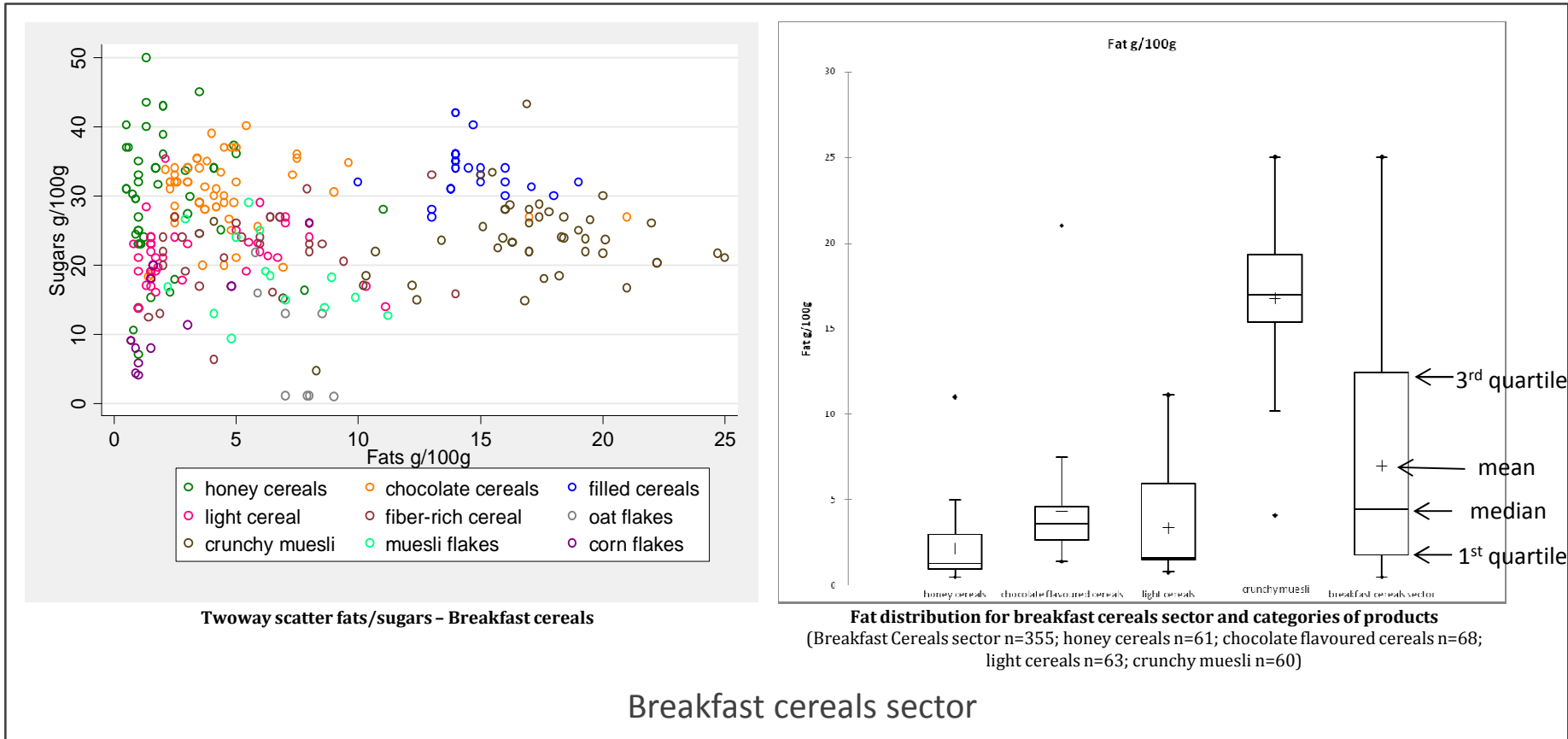
Reformulation of foods	
<p>Pros: Facilitate healthy choices by consumers, even those who are not fully informed about or conscious of the links between food consumption and health</p>	<p>Cons: Can result in higher production costs or additional investments (innovative processing, use of new ingredients, ...) May lead to rejection by consumers (sensory/taste modifications)</p>

Examples:

- decreasing the salt content in restaurants or processed food (New York City, United Kingdom)
- other nutrients targeted: saturated fatty acids (UK),
trans fatty acids (USA,Denmark)

BACKGROUND

Reformulation of foods is manageable: nutrient content varies within categories of products



The variability in food composition is not only due to differences between product categories, but also due to composition variability within the majority of food categories

OUR GOAL

If one assumes that individuals continue to consume the same amounts within each food category, ...

But that the nutritional characteristics of each food category have been improved in a realistic way (i.e. acceptable from both a technological and a sensorial point of view), ...

What would be the impact on the nutritional intake of individuals?

DATA

nutritional characteristics of processed food items

Oqali database

More than 23.000 products

Parameters:

- **Nutrient content:** energy, protein, fat, saturated fat, carbohydrates, sugars, fibre and sodium
- **All information available on the packages:** nutrition facts panels, nutrition and health claims, logos, consumption guidelines, ...

Sources :

- Product packaging
- Data from manufacturers and retailers
- Nutrient analyses

individuals' consumption patterns

INCA 2

- Completed by the French Food Safety Agency
- Information on individuals' daily food consumption collected in 2006 from a sample of 4000 subjects that was representative of the French population

market shares of food items

TNS Kantar Worldpanel

Provides details of the quantities bought and the corresponding food expenditures by a representative panel of 20,000 households in France

METHOD

3 food groups were considered in this study:

- breakfast cereals
- biscuits/pastries
- bread-based products

In collaboration with food technologists, each group was divided into food categories corresponding to relatively homogeneous groups of products with regard to the technologies and/or ingredients used

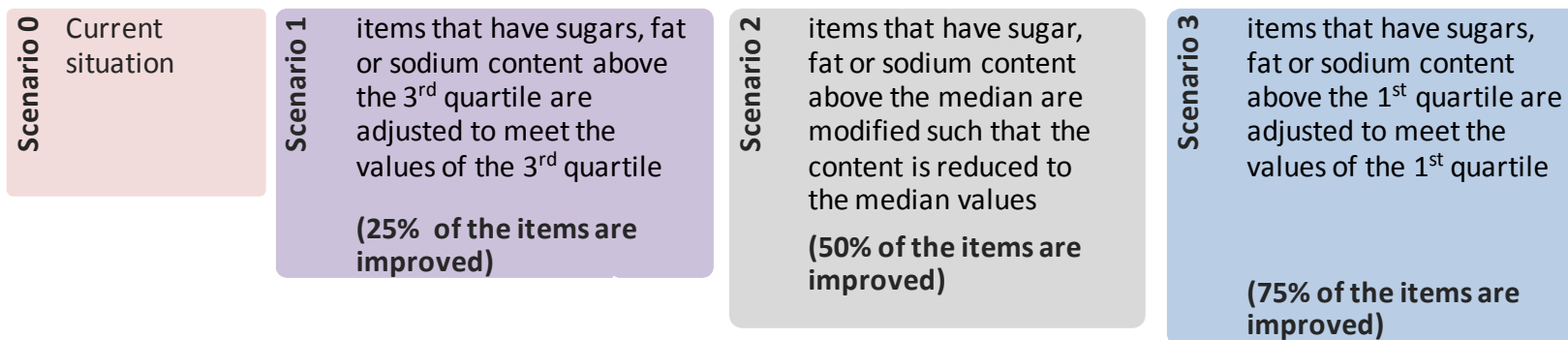
	Data available (number of items)	Categories of products (number)	Market coverage (%)	Improved categorie of products (number)
Breakfast cereals	355	29	75% (2008)	17
Biscuits ans pastries	1792	67	72% (2008)	22
Bread based products	620	31	57% (2009)	15

METHOD: scenarios analysis

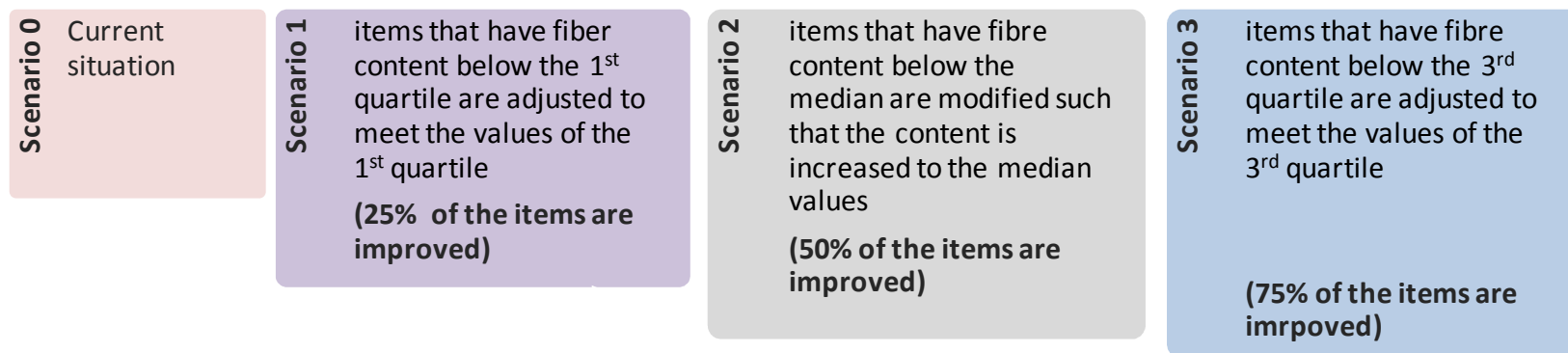
3 scenarios of food composition modifications

The formulation of the lowest nutritional quality food items was modified to improve the overall level of quality within a given food category

Sugars - Fat - Sodium

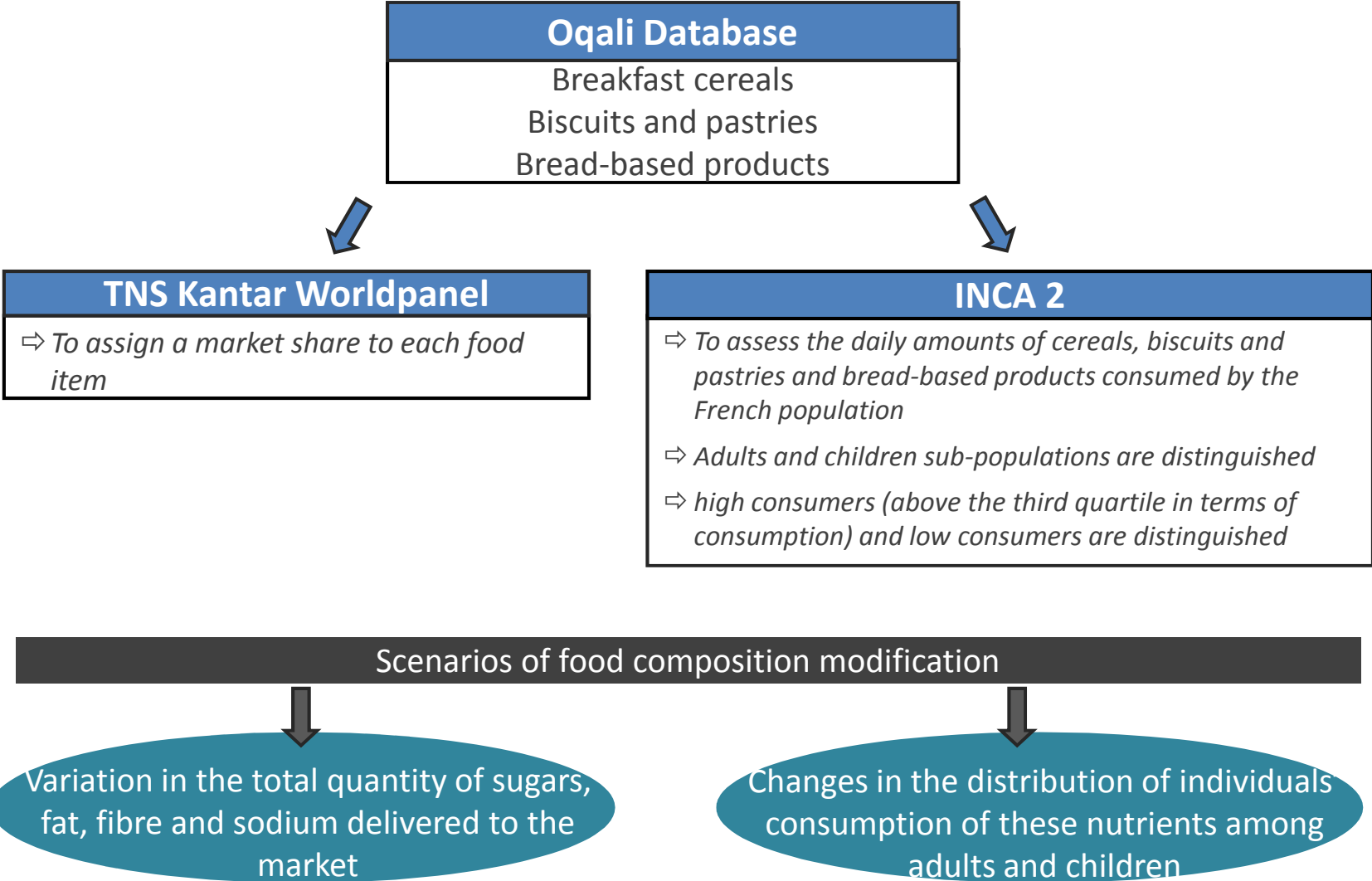


Fibre

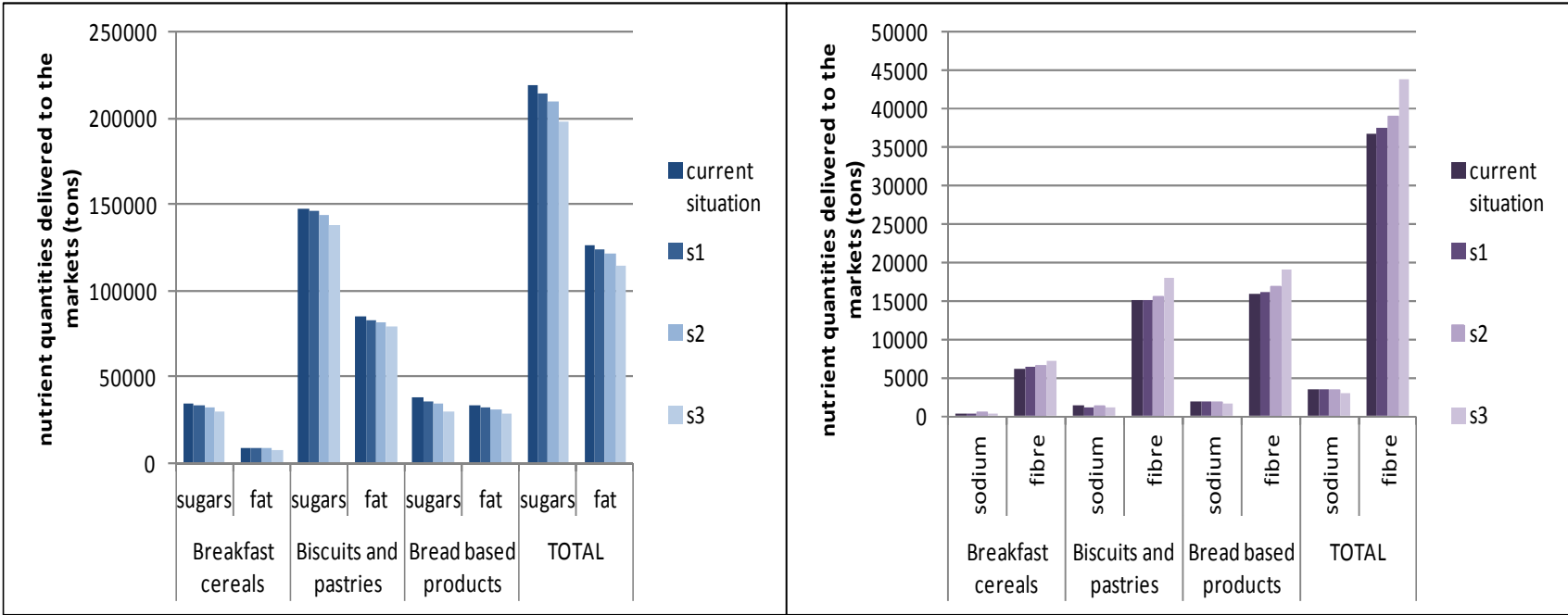


The modifications of the nutrient content were considered independently, and the simulation results reveal the impacts if the scenarios are applied to sugars or fat or sodium or fibre

METHOD



RESULTS: impacts on the total amount of nutrients delivered to the market



An increase in the nutritional quality of the lowest quality products within each food category can modify the total quantities of nutrients delivered to the market

RESULTS: impacts on the total amount of nutrients delivered to the market

Quantities of nutrients delivered to the market						
Food groups	Nutrient	Current situation (tons)	Δ1 (%)	Δ2 (%)	Δ3 (%)	
Breakfast cereals 29 categories Study period: 2008	sugars	34049	-3%	-6%	-11%	→ -993 to -3830 t
	fat	8773	-4%	-8%	-13%	
	fiber	6101	2%	7%	18%	→ +146 to +1105 t
	sodium	389	-4%	-9%	-20%	
Biscuits/pastries 51 categories Study period: 2008	sugars	146641	-1%	-2%	-6%	→ -1111 to -8888 t
	fat	84467	-2%	-3%	-7%	→ -1352 to -5723 t
	fiber	14916	1%	4%	19%	
	sodium	1195	-3%	-7%	-16%	
Bread-based products 31 categories Study period: 2009	sugars	37771	-5%	-9%	-22%	
	fat	32812	-1%	-4%	-14%	
	fiber	15777	2%	6%	20%	→ +317 to +3115 t
	sodium	1939	-3%	-7%	-14%	→ -49 to -272 t

The impacts range from 1% to 5% for S1, from 2% to 9% for S2, and from 6% to 22% for S3, depending on the food group and nutrient considered

RESULTS: impacts on individuals' nutrient consumption levels for children

Food groups	Nutrient	Average child consumers (3-17 years old)				Variation of nutrient consumption
		S0 (g/d)	S1 (g/d)	S2 (g/d)	S3 (g/d)	
Breakfast cereals - 817 individuals	sugars	7.07	6.89	6.67	6.42	-2.6% to -9.1%
	fat	1.32	1.27	1.21	1.17	-4.2% to -11.6%
	fibre	1.01	1.03	1.07	1.18	+1.8% to +16.6%
	sodium	0.071	0.068	0.065	0.06	-3.6% to -15.8%
Biscuits and pastries - 1087 individuals	sugars	2.89	2.88	2.85	2.77	-0.5% to -4.2%
	fat	1.7	1.68	1.65	1.61	-1.2% to -5.1%
	fibre	0.27	0.27	0.28	0.31	+0.5% to +14.6%
	sodium	0.024	0.024	0.023	0.022	-1.9% to -11.0%
Bread based products - 1025 individuals	sugars	2.42	2.35	2.27	2.09	-3.0% to -13.7%
	fat	2.6	2.59	2.55	2.34	-0.4% to -9.9%
	fibre	0.75	0.76	0.77	0.89	+1.4% to +18.8%
	sodium	0.108	0.105	0.102	0.098	-2.6% to -9.6%

Breakfast cereals:

- 2.6% - 9.1% decrease in the intake of sugars provided by these products
- 1.8% - 16.6% increase in the intake of fibre provided by these products

Biscuits and pastries:

- decrease in sugars intake provided by these products of 0.5% - 4.2%
- decrease in fat intake of 1.2% - 5.1%

RESULTS: impacts on individuals' nutrient consumption levels for adults

Food groups	Nutrient	Average adult consumers				Variation of nutrient consumption
		S0 (g/d)	S1 (g/d)	S2 (g/d)	S3 (g/d)	
Breakfast cereals 317 individuals	sugars	6.95	6.82	6.67	6.4	-1.8% to -7.9%
	fat	2.29	2.26	2.21	2.12	-1.4% to -7.5%
	fibre	1.9	1.93	1.97	2.11	+1.5% to +10.9%
	sodium	0.093	0.092	0.09	0.08	-1.4% to -13.5%
Biscuits and pastries 927 individuals	sugars	1.94	1.93	1.91	1.87	-0.3% to -3.5%
	fat	1.16	1.15	1.13	1.1	-1.4% to -5.3%
	fibre	0.2	0.2	0.2	0.22	+0.4% to +11.7%
	sodium	0.018	0.018	0.017	0.016	-1.7% to -10.8%
Bread based products 1111 individuals	sugars	2.07	2.02	1.96	1.79	-2.8% to -13.9%
	fat	2.31	2.3	2.26	2.08	-0.4% to -9.9%
	fibre	1.13	1.14	1.16	1.27	+1.0% to +12.10%
	sodium	0.145	0.142	0.138	0.132	-1.6% to -8.8%

Increase in fibre intake provided by bread based products of 1%-12.1%

Decrease in sodium intake of 1.6%-8.8%

RESULTS: impacts on individuals' nutrient consumption levels for high consumers

For children high consumers of breakfast cereals:

- the daily intake of sugars provided by breakfast cereals decreases by 0.4-1.4 g
- the daily intake of fibre increases by 0.04-0.37 g

For children high consumers of biscuits and pastries:

- the daily intake of sugars provided by these products decreases by 0.03-0.22 g
- the daily intake of fat decreases by 0.04-0.15 g

For adults high consumers of bread-based products, the simulation leads to:

- a 10-30 mg decrease in the daily intake of sodium provided by these products
- a 0.03-0.31 g increase in the daily intake of fibre
- a 0.13-0.63 g decrease in the daily intake of sugars

DISCUSSION

Limitations

1. Impacts on nutritional composition may be overestimated : food modifications in practice can be more complex than was simulated here. Example: a decrease in fat may necessitate an increase in the sugars content for technological or sensorial reasons
2. At the same time, these impacts have been underestimated : we only considered an increase in the minimum quality within each food category. It is likely that products of a higher nutritional quality will also be modified to maintain quality differentiation within the food family
3. It will be important for future research to assess the impact of such a strategy not only on a few select food groups, but on all processed foods

CONCLUSION

Scenarios = implementation of minimum quality standards (MQS) within each food category
The potential magnitude of the effects suggests that such a strategy can constitute a relevant target for public authorities

Practical application: implementation of charters of commitments between firms and the Government (France)

The MQS approach proposed here can target health benefits through the modification of foods in a domain that is acceptable:

- by consumers: food products retaining their familiar tastes
- by food companies: food products produced using well-mastered technologies

This study has shown that this strategy can yield significant results

The goals and results can be strengthened once the legitimacy of the plan increases

Thank you for your attention

For further information:

Combris, P. ; Goglia, R. ; Henini, M. ; Soler, L.G. ; Spiteri, M. Improvement of the nutritional quality of foods as a public health tool. Public Health. 2011, 125 (10) : 717-724

Oqali

ALIMENTATION
AGRICULTURE
ENVIRONNEMENT

INRA