



AGENCE FRANÇAISE  
DE SÉCURITÉ SANITAIRE  
DES ALIMENTS

# ***Monitoring of flavourings in food at a national level : a point of view***

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***EFCOVAL, Rome, WP4, september 2007***

# Context of exposure assessment to flavouring substances at Afssa

- Risk assessment in the field of flavouring substances at EU level (EFSA) and not at the national level
- More exposure assessments in the field of food additives at the national level
- However, there is a need to provide occurrence and intake data at EU level because of national or local specificities in the field of flavouring substances
- For instance traditional dishes with tarragon in the North of France (chicken, salads flavoured with tarragon) or with cinnamon in the East (flavoured biscuits)
  
- Question : How to estimate exposure to flavouring substances?
- How to monitor between individuals variability of exposure ?

## General principle of exposure assessment

Food intake (frequency, portion  
Sizes)

Food composition (occurrence  
and levels of flavouring substances)

Flavouring substances intake  
At the individual level  
(children, adults)

## Different uses of flavouring substances concentration data

Type of food composition data on flavouring substances	Level of disaggregation	Type of exposure assessment
Maximum level	Food group	TAMDI (Theoretical Added Maximum Daily Intake)
Mean level (from a Total Diet Study)	Generic food	Deterministic exposure assessment
Variability of occurrence and levels	Branded product or home recipe	Probabilistic / At risk consumer

## Different type of information on flavouring substances occurrences and concentrations in foods

- Packaging : only the information « flavour » in the list of ingredients, information in the denomination of the food product « strawberry ice-cream »
- Total diet studies : semi-aggregated data ( 172 core foods in France)  
Afssa
- Controls, mandatory surveillance plans (in France Ministry of consumption DGCCRF)
- Industry (an exemple)

## An opportunity to record information on the composition of branded products : the observatory of nutritional food quality 2007-2011

- Main aim : provide information on improvements of the nutritional quality of foods at the branded product level
- Main source of information : packaging information
- Use of a private database on informations on new products from packagings : Mintel GNPD™
- An AFSSA/INRA collaboration

# Exemple of a product description in GNPD™ database

## Italian Dessert with Sponge

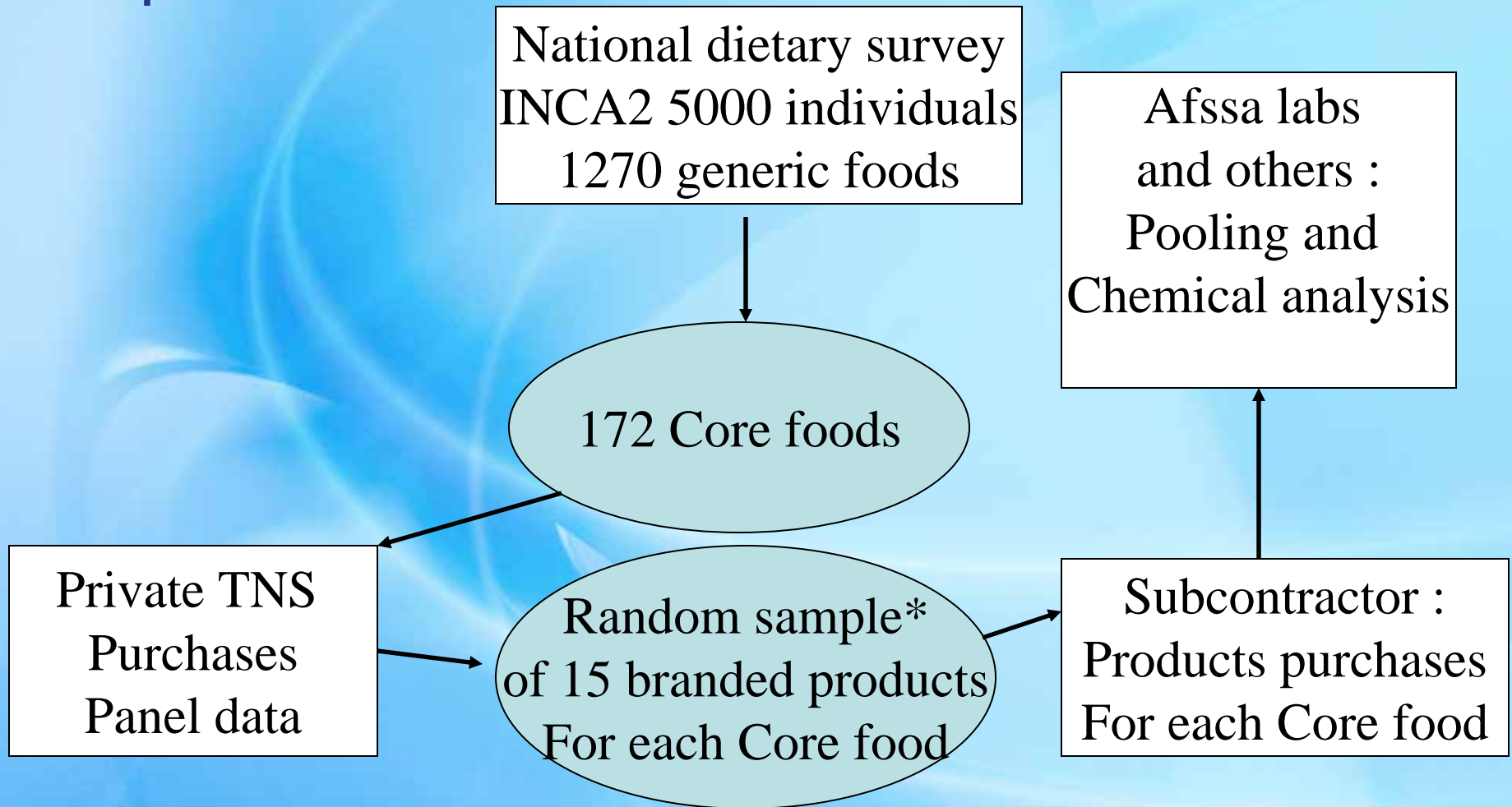
**Record ID:** 647913  
**Company:** Rancio Valcuvia  
**Brand:** Bontà Divina  
**Category:** Desserts & Ice Cream  
**Sub-Category:** Chilled Desserts  
**Country:** Italy  
**Date Published:** 23 Jan 2007  
**Launch Type:** New Variety/Range Extension  
**Price in local currency:** 1.50€  
**Price in US Dollars:** \$1.94



Product Variant	Flavours	Positioning Claims
—	Chocolate (unspecified), Cream	—

+ list of ingredients as described on the packaging

## The Afssa TOTAL DIET STUDY : a tool for monitoring food composition and contamination



\* Inclusion probability : market share + stratification

# The Afssa TOTAL DIET STUDY : a tool for monitoring food composition and contamination

- **Pros**

- An already existing tool
- Stratified random sampling of foods
- TDS uses individual data for exposure assessment
- Intermediate cost because of pooled samples

- **Cons**

- Semi-aggregated information (pooled foods)
- Not valuable for probabilistic exposure assessment

## The surveillance surveys of the French Department of Consumption (DGCCRF)

- Use levels (cost effective, good experience in the field of food additives)
  - Food producers must give their recipes (mandatory survey) but the recipe is being kept confidential → no publication at the brand level
  - But food producers don't always know the composition of the flavours they buy (no or little information on flavouring substances concentrations)
- Chemical analysis (expensive)

## Type of consumption data available

- Afssa National dietary survey INCA1 1999 and INCA2-2006/7:
- Pros :
  - Individual data
  - Some information on branded products
- Cons :
  - Limited information on flavours (not explicitly asked at the moment, available in open ended description of product)
  - Limited information on recipes used at home
  - Limited observation duration limited, no brand loyalty estimate (EFCOVAL WP3)

# Exemple of a food record in AFSSA/INCA2 2006-2007

## Le dîner (le soir)

Si PAS de dîner, cocher ici : 

Sinon noter l'heure : de 20 h 20 à 20 h 50

Avec qui : (entourez le chiffre)  1 Seul

2. En famille

3. Entre amis

4. Autre

Lieu : (entourez le chiffre)  1. Chez vous

2. A la cantine (école, entreprise, restau U)

3. Chez des amis

4. Au fast-food

5. Au restaurant, café...

6. Autre

	NOM DE L'ALIMENT, DE LA BOISSON, DU PLAT Précisez le MODE DE CUISSON des viandes et poissons N'oubliez pas les SAUCES, les ASSAISONNEMENTS et les BOISSONS (eau, soda, alcool, ...). Pour l'eau, n'oubliez pas d'indiquer s'il s'agit d'eau du robinet ou d'eau minérale Remplissez une ligne par aliment ou boisson	MARQUE - NOM commercial	QUANTITE : Choisir (1) ou (2) ou (3) (1) à l'aide du livret-photo, reporter : le numéro      la lettre			Nombre de parts ou d'unités	Cet aliment est-il ...		
			(2) Par unité si connue (en g ou en ml)	(3) En cuillère à soupe (CS) ou à café (CC)	Plusieurs réponses possibles (voir l'emballage) 1. Allégé en graisses 2. Allégé en sucres 3. Enrichi (vitamines, minéraux, ...) 4. Autre produit diététique 5. Rien de cela		Une seule réponse possible par colonne 1. Frais 2. Conserve 3. Surgelé 4. Autre 1. Industriel 2. Fait par vous ou un proche 3. Autre		
01	oeuf dur				60	1	1 2 3 4 (5)	(1) 2 3 4	1 2 (3)
02	salade de mâche		54	B		1	1 2 3 4 (5)	(1) 2 3 4	1 2 (3)
03	tomate crue		55	A		2	1 2 3 4 (5)	(1) 2 3 4	1 2 (3)
04	saucisette				cc	1	1 2 3 4 (5)	1 2 3 (4)	(1) 2 3
05	prune bifidus yoghurt		220	D		1	1 2 3 4 (5)	(1) 2 3 4	1 2 (3)
06	pain baguette	Paul	1	B		1	1 2 3 4 (5)	(1) 2 3 4	1 2 (3)
07	eau minérale	coron	237	B		2	1 2 3 4 (5)	1 2 3 (4)	(1) 2 3
08	yaourt aux fruits (nature) bifidus	activa	108		125	1	1 (2) 3 4 5	(1) 2 3 4	(1) 2 3
09	chocolat noir 70%	lidl	232	A		1	1 2 3 4 (5)	1 2 3 (4)	(1) 2 3
10							1 2 3 4 5	1 2 3 4	1 2 3
11							1 2 3 4 5	1 2 3 4	1 2 3
12							1 2 3 4 5	1 2 3 4	1 2 3

## Type of consumption data available

### Marketing panel data :

- Pros :
  - Detailed information on branded products
  - Some information on flavors used (systematic for some foods like biscuits)
  - Survey duration : 40 weeks
- Cons :
  - Household data, not individual
  - At the moment, no information on recipes used at home
  - Private surveys, not published

## Exemple of the 1998 exposure assessment study for safrole, estragole, coumarin and capsaicin

- First step : TAMDI exposure assessment to identify main contributors
- Second step : ANIA (French CIAA) study on identification of generic foods with no use of corresponding flavours
- Third step : ANIA study on the real maximum use levels (based on private chemical analysis by the industry and use levels of flavours)
- Exposure assessment by OCA (public exposure assessment unit before Afssa foundation)
- Conclusions : variable reduction of exposure in comparison with TAMDI (between 10% and 61% according to the flavouring substances )

## Exemple of a recent Afssa exposure assessment in the field of flavouring substances : Coumarin intake

- Only TAMDI exposure assessments using different hypothesis on maximum levels
- Results comparable to EFSA TAMDI exposure assessment in 2004
- Mean intake adults 0.04 mg/kg bw/day, P95= 0.11 mg/kg bw/d for children and adults vs EFSA estimate 0.07 mg/kg bw/d, more realistic estimate 0.02 mg/kg bw/d by (Lake et al,1999).
- No availability of cinnamon use in the national dietary survey : necessary to use Marketing panel data and Monte-Carlo simulation.
- Question : is it useful to include coumarin in the Total Diet Study ?

## Conclusions

- Flavouring substances is a very difficult topic : need of a step by step approach from overestimates to more realistic approaches
- TDS could be a good compromise to estimate mean concentrations of flavouring substances in foods when an analytical method is available but the variability of the exposure is underestimated
- There is some useful information on packaging but it may be a lot of work to gather the information (test of marketing databases useful)
- How to manage the industry as a source of information ?