



**Allergy vigilance Network:
comparison of reports for 2002 - 2003**

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The World Health Organization ranks allergic diseases as the fourth most important health issue, particularly in developed countries. These diseases affect between 10 to 40 % of the population, depending on age and country, but by 2010 they could concern half the world population, since the prevalence of respiratory allergy has increased by 50 % every 10 years. Food allergy (FA) is observed in 3.24 % of the French population [1]. The increased prevalence of FA is as worrying as that of respiratory allergy, since the percentage of emergency admissions to French hospitals related to food-induced anaphylactic shock has increased fivefold over the last 10 years [2]. Epidemiological studies in Great Britain and Sweden have identified FA as the primary cause of anaphylactic shock [3, 4].

Amongst the many factors involved in food allergy, physico-chemical modifications to food proteins and the use of new substances in industrial food processing are incriminated. **Selection of high yield vegetables** capable of synthesizing stress proteins (PR protein: pathogenesis-related proteins) and resistant to fungal and viral aggression, may also increase the incidence of food allergies since the PR proteins are major allergens [5]. Finally, it has also been seen that further research must be carried out on allergy and genetically modified organisms (GMO) [6]. Clinical allergists must cooperate to identify and report these emerging issues.

Exposure to many substances (pollutants, pollens, microbial agents, medication, etc.) is likely to interfere with immune expression in genetically predisposed patients. As epidemiology cannot exist without clinicians, allergology cannot exist without thorough knowledge of the environment. In the field of respiratory allergy, in France, we now have access to information concerning the quality of air (external pollution, from the *Agence de l'environnement et de la maîtrise de l'énergie*¹ (ADEME), internal pollution, from the *Réseau National de Surveillance en Aérobiologie*² (RNSA) with weekly reports of pollen and fungal counts). For occupational disease, we have reports of cases of occupational asthma from the *Observatoire National des Asthmes Professionnels*³ (ONAP), and for medication, every doctor must declare any iatrogenic reaction to Pharmacovigilance centers.

Until 2001, we had no system reporting FA in France, and the implication of FA in anaphylactic shock and episodes of serious acute asthma were poorly documented and probably under-estimated [7]. The analysis of 32 cases of lethal anaphylaxis in the US by Bock [8] showed that 90 % occurred in children and young adults who knew they were allergic after they unknowingly ate peanut or hard-shelled fruit. The majority had no available adrenalin. This publication triggered much reflection on how to prevent such accidents, and led to the founding of the first Allergy Vigilance Network in the US (<http://www.foodallergy.org>), open to the general public.

The French National Allergy Vigilance Network, founded in January 2001 [9], and made up of allergists, has several aims:

- 1) to report cases of lethal and pre-lethal anaphylaxis: anaphylactic shock, laryngeal edema, serious asthma, etc.
- 2) to report other serious anaphylactic reactions (immunotherapy accident, drug-related allergy, serious allergy to insects, etc.).
- 3) to carry out short-term, cooperative studies on certain food allergies (for example: sensitization to peanut).
- 4) to assess the allergenic risk of “novel foods”.

By February 2004, this network had 305 members throughout France, including French overseas territories. Other European countries (Belgium, Luxembourg, Finland, Greece, Italy, Poland, Portugal, Switzerland), North African countries (Algeria, Morocco, Tunisia), South

¹ Agency for Environment and Energy Control

² National Network of Aerobiological Monitoring

³ National Observatory for Occupational Asthma

American countries (Argentina, Chile) and the US now participate in regular reporting of new cases in three languages via E-mail (l.parisot@chu-nancy.fr).

Table I compares the 107 and 85 cases of serious food-induced or idiopathic anaphylaxis reported during 2002 and 2003 respectively. Whereas FA, all clinical pictures pooled, concerned mainly children, potentially lethal FA concerned mainly adults (approximately 2 adults for 1 child), because of associated risk factors: effort, alcohol and concomitant intake of medication (9.3%). Anaphylactic shock was reported for 75 % of all cases in 2002 and for 42.5 % in 2003. All physicians recognize laryngeal oedema as a possible expression of FA, but isolated acute bronchospasm is recognized more rarely as due to food: this clinical event of FA is probably under-estimated (5.6 and 4.7% respectively).

In accordance with information from English speaking countries, allergy to peanut and hard-shelled fruit is the primary cause of accidents, but in France it concerned only 28 and 27% of observations. The foods implicated are extremely varied: legumes, including peanut, play an important role (about 23 % in 2002 and 16 % in 2003). The high number of accidents reported with crustaceans and molluscs reported throughout 2003 (22 % of accidents) reflects the eating habits of the French, especially accidents occurring after eating snails which represent the principal cause of serious acute asthma in 2002. These accidents occur in subjects allergic to mites by cross-reaction with a common allergen (panallergen), tropomyosin, identified in arthropods such as shrimps, cockroaches, mites and molluscs such as snails. The group of vegetables that are cross-reactive with latex is responsible for many accidents. Allergens are varied, but buckwheat seems to play an important role. Wheat flour is an emerging allergen, probably as a result of improved diagnosis of effort-induced anaphylaxis, for which wheat flour is the principal allergen implicated.

When comparing recordings for 2002 and 2003, a marked difference in the number of accidents involving milk can be seen. The active participation of allergists in the network over the coming years will lead us to understand the real implication of each allergen.

Table I:

		2002		2003	
Total observations		107		85	
Children		33	31%	31	36%
Adults		74	69%	54	64%
Clinical picture	Death	2		1	
	Anaphylactic shock	64	75.3%	36	42.4%
	Acute serious asthma	6	5.6%	4	4.7%
	Laryngeal angioedema	17	15.9%	15	17.6%
	Serious systemic reaction	20		28	
	Angioedema			2	
Allergens	Peanut	14	13 %	10	11.7 %
	Other legumes	11	10.3%	4	4.7 %
	Soya	3		3	
	Lupin flour	7	6.5%	1	
	Lentils	1		1	
	Hard-shelled fruit	16	15%	13	15.3%
	Brazil nut	1		1	
	Cashew nut	5		3	
	Walnut	2		2	
	Hazelnut	4		2	
	Pistachio	1		2	
	Pine seed	1		1	
	Chestnut			2	
	Almond	2			
	Fruits cross-reactive with latex	13	12.1%	5	5.9%
	Avocado	4			
	Kiwi	2			
	Buckwheat	3	2.8 %	4	4.7%
	Fig	2			
	Banana	1			
	Melon	1			
	Jack fruit			1	
	Mango			1	
	Wheat flour	7	6.5 %	4	4.7%
	Celery	5	4.7%	3	3.5%
	Fennel			1	
	Endive	1		1	
	Mustard	1			
	Artichoke			1	
	Beetroot			1	
	Shallot			1	
	Peach	2			
	Pear	1			
	Blackberry			1	
	Sesame	3	2.8 %	2	2.4%
	Crustaceans	10	9.3 %	9	10.6%
	Shrimp	9	8.4 %	7	
	Crab, spider crab	1		1	
	Molluscs	6	5.6 %	10	11.7%
	Snails	5	4.7%	8	9.4%
	Cuttlefish, squid	1		1	
	Coquille Saint Jacques			1	

	Milk	3	2.8 %	11	12.9%
	Cow's milk	3		9	
	Goat's milk			1	
	Sheep's milk			1	
	Meat, offal	4	3,7%	3	3.5%
	Poultry (turkey, Guinea fowl)	2			
	Pork	1			
	Kidney	1		2	
	Bovine albumin serum			1	
Favoring factors	Fish	2	1.9%		
	Pollen			1	
	Quinine (Schwepp's)	1			
	Sulfites	1			
	Idiopathic shock	4	3.7%	3	3.5%
	Effort	17	15.9%	5	5.9%
	Alcohol	4	3.7%	5	5.9%
	Aspirin, NSAIDs	5		1	
	Beta-blockers	4		4	
	Angiotensin II receptor antagonists	1		2	

Table II shows how important it is to have correct labelling to prevent food-induced anaphylaxis. The number of accidents attributed to consumption of a masked allergen (13 and 8 %) is below that reported by Bock, perhaps because of improved labelling. More effort should be made however, since we found five cases (1 lethal) during 2002, occurring after eating a so-called "almond" macaroon that contained peanut as a masked allergen. This accident was reported to the *Direction générale de la concurrence et répression des fraudes*⁴ (DGCRF) which now regulates labelling.

Table II:

	2002	2003
Emergency ambulance service and/or Admission to Emergency Unit	89 %	73 %
Adrenalin used	55 %	49,5 %
Hospitalization	65,4%	52 %
Admission to intensive care	20.6%	10,5 %
Consumption of a masked allergen	14 cas (peanut: 6; lupin: 4; nut: 1)	7 cas (peanut: 4; lupin: 1; nut: 1; milk: 1)
Error in labelling	1	1
No labelling	4 (one lethal case)	3
Faulty labelling: no warning of an allergen requiring mandatory labelling		1

The network has also identified labelling errors (confusion of batches containing hard-shelled fruit). We found one accident attributed to faulty labelling since there was no warning of an

⁴ General Directorate for Competition and the Repression of Fraud

allergen that had been added intentionally and which required mandatory labelling (farmhouse style turkey sausage with unspecified addition of milk and egg). Although peanut is definitively the principal allergen involved in accidents with masked allergens, it is a matter of concern that the consumption of lupin unknown to patients is responsible for 24 % of these accidents [10], since lupin, unlike peanut, does not figure on the list of mandatory labelled allergens [11]. Measures must be taken to improve the labelling of products for sale in bakeries and cake shops since many accidents have been attributed to peanut, lupin or hard-shelled dried fruits incorporated into bread or Danish pastries and for which customers receive no warning (peanut in macarons (5 cases), bread containing peanut (1 case), lupin (5 cases), walnuts or nuts (2 cases)).

After two years in operation, the Allergy Vigilance Network has proved its worth: it is an effective health warning system carrying out epidemiological research, that will steadily improve with time and would not exist without the close cooperation of voluntary clinicians, dedicated to improving the safety and quality of life of their patients.

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