



Paper for Discussion: Timing of introduction of gluten into the infant diet

Agenda Item: 4

Please see paper attached.

Timing of introduction of gluten into the infant diet

Issue

1. To consider the European Food Safety Authority's (EFSA) Scientific Opinion on the appropriate age for introduction of complementary feeding of infants and, taking account of the available evidence, to comment on the conclusions of the Opinion relating to the timing of introduction of gluten into the infant diet.

Background

2. On the request of the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) has produced a scientific opinion on the appropriate age for the introduction of complementary food to infants in the EU. This request arose because of an inconsistency within the EU legislation and between the EU legislation and the relevant Codex Standard with regard to labelling of complementary food (details can be found in the EFSA Opinion, attached as Annex 1). The Panel adopted and published the Opinion on the 22 December 2009 (see Annex 1).
3. The Opinion discusses the available scientific evidence and draws a number of conclusions, most notably on the timing of introduction of gluten into the infant diet. The conclusions, as stated in the Summary and Overall Conclusions, are:
 - “On the basis of present knowledge, the Panel concludes that the introduction of complementary food into the diet of healthy term infants in the EU between the age of 4 and 6 months is safe and does not pose a risk for adverse health effects (both in the short-term, including infections and retarded or excessive weight gain, and possible long-term effects such as allergy and obesity)”
 - “Exclusive breast-feeding provides adequate nutrition up to 6 months of age for the majority of infants, while some infants may need complementary foods before 6 months (but not before 4 months) in addition to breast-feeding in order to support optimal growth and development”
 - “presently available data on the risk of celiac disease and type 1 diabetes mellitus support the timing of the introduction of gluten containing food (preferably while still breast-feeding) not later than 6 months of age”
4. The full review of the scientific evidence underlying the conclusions can be found in section 2 of the Opinion (Annex 1). The specific evidence surrounding introduction of gluten into the infant diet in relation to coeliac disease and type 1 diabetes mellitus risks can be found at section 2.4.3 in Annex 1. Copies of the key scientific papers on gluten introduction and risk of coeliac disease/type 1 diabetes that are referenced in that section are attached in Annex 2 and 3 for the Subgroup's information.

Current Government Advice

5. The Government advises that breastmilk provides all the nutrients a baby needs in the first half of infancy and recommends exclusive breastfeeding for around the first six months of an infant's life. It is recommended that introduction of solid foods occurs at around six months, and that breastfeeding should continue beyond the first six months along with appropriate types and amounts of solid foods. Infant formula may be used as an alternative when mothers do not breastfeed or choose to supplement breastfeeding.
6. UK Government further advises against the introduction before 6 months of age of commonly allergenic foods such as peanuts, nuts, seeds, egg, cows' milk, soya, wheat (and other cereals that contain gluten such as rye and barley), fish and shellfish.

Discussion

Introduction of complementary foods into the infant diet

7. EFSA's conclusion that "*introduction of complementary food into the diet of healthy term infants in the EU between the age of 4 and 6 months is safe and does not pose a risk for adverse health effects*", is inconsistent with the current UK Government's recommendations to breastfeed exclusively for around the first six months of life, and to not introduce the common allergenic foods before 6 months of age. However, their opinion is consistent with current EC labelling legislation on complementary food for infants, which requires manufacturers to label weaning foods with the appropriate age for use, which shall not be less than 4 months.
8. The Subgroup may wish to note that the issue of timing of introduction of foods (including allergenic foods) into the infant diet, from the point of view of minimising the risk of development of allergies, is an area of significant scientific uncertainty at the current time due to a lack of data. The EFSA Opinion itself states in the detailed discussion of allergy evidence at the end of section 2.4.2 that "*The Panel considers that the available data do not permit a conclusion on the appropriate age for introduction of complementary feeding with respect to allergy prevention or reducing the risk of allergy*". The Subgroup may also wish to be aware that this is an area of active research, with a number of research studies currently underway to investigate the importance of route and timing of exposure to allergenic foods during early life, on the risk of later development of food allergies (some funded by the Food Standards Agency) (see Annex 4). These studies are not due to report for several years.
9. Finally, the Subgroup may wish to be aware of a recent review by the Committee on Toxicity (COT) of their previous recommendations on peanut avoidance and allergy, which was informed by a literature review of studies on the effects of exposure to/avoidance of allergenic foods in early life and later development of allergy. One of several conclusions drawn by the COT

in that review was that “human data relating dietary consumption or avoidance of peanut or other allergenic foods in childhood to the development of sensitisation or allergy or tolerance to peanut, are limited and inconsistent” (full COT Statement available at: <http://cot.food.gov.uk/cotstatements/cotstatementsyrs/cotstatements2008/cot200807peanut>)

Introduction of gluten into the infant diet

10. In the UK, mothers who decide to introduce solids before 6 months of age are advised to avoid giving wheat-based foods and other foods containing gluten to infants who are under six months old. This is based on advice from the Committee on Medical Aspects of Food Policy (COMA) in their 1994 report *Weaning and the Weaning Diet*¹ in order to prevent coeliac disease. Currently, foods marketed as suitable for babies aged 4-6 months do not generally contain gluten. In 2003, in response to being asked whether only infants with a family history of coeliac disease should avoid gluten, SACN restated COMA’s advice that foods containing gluten should not be given to infants below the age of 6 months, and that this advice applied to all infants².
11. The current EFSA Opinion concludes that “*presently available data on the risk of celiac disease and type 1 diabetes mellitus support the timing of the introduction of gluten containing food (preferably while still breast-feeding) not later than 6 months of age*”. The EFSA opinion also clearly states that the introduction of gluten between 4-6 months could be beneficial, particularly for infants who are still being breastfed when gluten is introduced.
12. The latest Infant Feeding Survey (2005) showed that in the UK, 51% of mothers had introduced solids into their infants diet by 4 months of age³. The survey also showed that at 4-6 months (Stage 2), only 17% of mothers were exclusively breastfeeding, 68% were giving only formula milk, and 15% were mixed feeding. This means a large proportion of infants are not receiving breastmilk at a time when EFSA states that it would be beneficial to introduce gluten.
13. In considering the evidence relating to timing of introduction of gluten into the infant diet and health risks, the Subgroup may wish to be aware that this too is an area of ongoing and active research. In particular, the Subgroup may wish to note that a major multinational European Commission Framework 6 funded project is underway. Further information is provided in Annex 4.

¹ Department of Health (1994) *Weaning and the Weaning Diet*. 45. London, The Stationery Office. Report on Health and Social Subjects.

² http://www.sacn.gov.uk/meetings/sub_groups/maternal_child_nutrition/22012003.html

³ Bolling K, Grant C, Hamlyn B, Thornton A (2007) *Infant Feeding Survey 2005*. London, The Information Centre.

Questions for the Subgroup

14. The Subgroup is asked to consider:

- Whether the evidence set out in the EFSA Opinion and publications appended support the introduction of gluten to all infants between 4 and 6 months of age?
- Whether any health risks or benefits of introducing gluten between 4-6 months, are associated with the infant receiving breastmilk and/or formula milk?

Annex 1 – EFSA Opinion on the appropriate age for introduction of complementary feeding of infants

Please see paper attached

Annex 2 - Key papers on gluten and risk of coeliac disease as referenced by EFSA

Please see following papers attached:

- Akobeng *et al.*, 2006. Effect of breastfeeding on the risk of coeliac disease: a systematic review and meta-analysis of observational studies. *Arch. Dis. Child.* 91, 39-43
- Carlsson A, *et al.*, 2006. Prevalence of celiac disease: Before and after a national change in feeding recommendations. *Scand. J. Gastroenterol* 41, 553-558
- Ivarsson A, *et al.*, 2000. Epidemic of celiac disease in Swedish children. *Acta Paediatr.* 89, 165-171
- Ivarsson A, *et al.*, 2002. Breast-feeding protects against celiac disease. *Am. J. Clin. Nutr.* 75, 914-921
- Norris *et al.*, 2005. Risk of celiac disease autoimmunity and timing of gluten introduction in the diet of infants at increased risk of disease. *J.A.M.A.* 293, 2343-2351

Annex 3 - Key papers on gluten and risk of type 1 diabetes as referenced by EFSA

Please see following papers attached:

- Kyvik KO, Green A, Svendsen A, Mortensen K, 1992. Breast feeding and the development of type 1 diabetes mellitus. *Diabet. Med.* 9 (3), 233-5.
- Meloni T, Marinaro AM, Mannazzu M, Ogana A, La Vecchia C, Negri E and Colombo C, 1997. IDDM and early infant feeding. Sardinian case-control study. *Diabetes Care* 20 (3), 340-342
- Nigro G, Campea L, De Novellis A, Orsini M, 1985. Breast-feeding and insulin dependent diabetes mellitus. *Lancet* 1 (8426), 467.
- Norris JM, Barriga K, Klingensmith G, Hoffmann M, Eisenbarth GS, Erlich HA, Rewers M, 2003. Timing of initial cereal exposure in infancy and risk of islet autoimmunity. *J.A.M.A.* 290, 1713- 1720.
- Samuelsson U, Johansson C, Ludvigsson J, 1993. Breast-feeding seems to play a marginal role in the prevention of insulin-dependent diabetes mellitus. *Diabetes Res. Clin. Pract.* 19(3), 203-10.
- Wahlberg J, Vaarala O, Ludvigsson J; ABIS-study group, 2006. Dietary risk factors for the emergence of type 1 diabetes-related autoantibodies in 2 1/2 year-old Swedish children. *Br. J. Nutr.* 95(3), 603-8.
- Ziegler A-G, Schmidt S, Huber D, Hummel M, Bonifacio E, 2003. Early infant feeding and risk of developing type 1 diabetes-associated autoantibodies. *J.A.M.A.* 290, 1721-1728.

Annex 4 - Summary details of ongoing clinical intervention studies investigating the influence of timing of introduction of allergenic foods (including gluten) on health outcomes with particular focus on food allergy and/or food intolerance (coeliac disease)

Study Title	Lead Institution	Purpose of Study	Study Duration	Sample Size	Population	Funding Bodies
Learning Early About Peanut Allergy (LEAP study)	King's College London	To determine whether the introduction of peanut into the diet of high-risk infants aged 4 – 10 months promotes the development of oral tolerance and leads to a reduced prevalence of peanut allergy by 5 years of age	2007 - 2012	n = 640 (340 in each arm)	Infants at high risk of developing peanut allergy	<ul style="list-style-type: none"> - US NIH Immune Tolerance Network - FSA are funding immunological assays on blood samples collected from Trial participants
Enquiring About Tolerance (EAT study)	King's College London	To determine whether the early, sequential introduction (from 3 months of age) of 6 allergenic foods into the infant diet, alongside continued breastfeeding, promotes the development of oral tolerance and leads to a reduced prevalence of food allergies by 3 years of age	2008 - 2015	n = 2500 (1250 in each arm)	Babies from the general population	<ul style="list-style-type: none"> - FSA - MRC
Prevent Coeliac Disease (PreventCD)	Leiden University Medical Centre, The Netherlands	To determine whether the introduction of gluten into the infant diet from 4 months of age, alongside continued breastfeeding, results in a reduction in the predicted cases of coeliac disease by 3 years of age	2007 - 2011	n = 1000 (500 in each arm)	Babies at high risk of developing coeliac disease	EU Framework 6 Programme