

## COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD, CONSUMER PRODUCTS AND THE ENVIRONMENT

### **Review of risks arising from the infant diet and the development of atopic and autoimmune disease: Systematic review C Part II – Dietary Exposures during Pregnancy, Lactation and/or Infancy for Reducing Risk of Allergic or Autoimmune Outcomes: a systematic review and meta-analysis (reserved business)**

#### **Introduction**

1. The COT has been asked by the Department of Health (DH) to provide advice on the risks arising from the infant diet that are related to the development of atopic and autoimmune disease. This is in support of a review being undertaken by the Scientific Advisory Committee on Nutrition (SACN) Sub-group on Maternal and Child Nutrition (SMCN) of UK Government recommendations on breastfeeding and the introduction of solid foods into the infant diet.

2. To facilitate the COT evaluation, in March 2013 the Food Standards Agency (FSA) commissioned Imperial Consultants to conduct three separate systematic reviews to assess comprehensively and systematically the existing literature on the relationship between early dietary exposures and risk of developing atopic and autoimmune disease. The first of these reviews, systematic review A, was considered at the COT meeting in June 2015<sup>1</sup>. The COT considered systematic review C part II (intervention studies) and review C Part I on hydrolysed cow's milk formula at their meeting in September 2015<sup>2</sup>. The minutes from these meetings, along with the final reports of the projects, will be published once all of the reviews are finalised and published in the peer-reviewed literature.

3. Systematic review C part II explores the evidence concerning the avoidance or exposure to specific dietary patterns, food groups or nutrients during infancy, pregnancy and lactation and risk of developing atopic and autoimmune disease.

4. Due to its complexity, systematic review C part II will be considered in two parts. At this meeting, the Committee are asked to consider the evidence on fruits and vegetables, vitamins and minerals, fats and exposure to other non-allergenic dietary exposures which were primarily observational studies. Previously, the evidence on probiotics, prebiotics, polyunsaturated fatty acids, maternal allergenic food avoidance and multifaceted interventions (primarily derived from intervention studies) were considered at the meeting in September 2015. This item is to be discussed as reserved business because the results of systematic review C have yet

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<sup>1</sup> Papers available at: <http://cot.food.gov.uk/cot-meetings/cotmeets/cot-meeting-30-june-2015>

<sup>2</sup> Papers available at: <http://cot.food.gov.uk/cot-meetings/cotmeets/cot-meeting-8-september-2015>

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to be accepted for publication in a peer-reviewed journal. Annex 1 contains the overarching report (a revised version of the report submitted for the intervention studies considered in September 2015) and annexes 2-5 contain the individual reports for each dietary component for systematic review C. These will be withheld from publication on the Food Standards Agency's website at this time.

5. Further background to this topic can be found in the cover paper for the COT discussion of Review A from their meeting in June 2015.

### **Systematic review C**

6. The main purpose of systematic review C part II was to investigate the role of exposure to specific dietary components during pregnancy, lactation and infancy in the development of atopic and allergic disease. The systematic review of observational studies presents data on the following variables: fruit and vegetable consumption; vitamin and mineral intake; fat consumption and consumption of other, non-allergenic foods during pregnancy, lactation or infancy. Systematic review C aimed to address the following research questions:

- Does the maternal diet during pregnancy and lactation influence children's future risk of atopic disease, allergic sensitisation or autoimmune disease?
- Does the diet at weaning and during the first year of life influence children's future risk of atopic disease, allergic sensitisation or autoimmune disease?

### **Results of systematic review C part II (intervention)**

7. An overview of the results of the final four reports included in systematic review C is presented in Annex 1 (overview document). The results of each of these analyses are presented in the following annexes:

- Annex 2: Fruit and vegetable consumption during pregnancy, lactation or infancy and risk of atopic disease, allergic sensitisation or autoimmune disease
- Annex 3: Vitamin and mineral intake during pregnancy, lactation or infancy and risk of atopic disease, allergic sensitisation or autoimmune disease
- Annex 4: Fat consumption during pregnancy, lactation or infancy and risk of atopic disease, allergic sensitisation or autoimmune disease
- Annex 5: Consumption of other, non-allergenic, foods during pregnancy, lactation or infancy and risk of atopic disease, allergic sensitisation or autoimmune disease

8. The individual reports are summarised on pages 18-22 of the overview document and a summary table of the findings is provided on pages 45-46 (Appendix 1, table 4). Overall conclusions can be found on page 36-37 of Annex 1.

9. Dr Boyle and Dr Garcia will attend the Committee meeting on the 2nd February. They will present the results of the final four reports of systematic review C and address any questions the Committee may have. Dr Boyle hopes to submit a

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version of this work for publication in the peer reviewed literature and therefore the annexes will not be made publically available at this time.

### **Questions on which the views of the Committee are sought**

10. Members are invited to comment on systematic review C part II (observation studies) and to consider the following questions:

- i. Do Members consider that the review provides evidence of a link between maternal exposure to the individual dietary components during pregnancy or lactation and subsequent development of atopic disease, allergic sensitisation or autoimmune disease in the child?
- ii. Do Members consider that the review provides evidence of a link between exposure to individual dietary components during the first year of life and subsequent development of atopic disease, allergic sensitisation or autoimmune disease?
- iii. If Members consider there is evidence to support a link in either of the above cases, they are asked to comment on whether this link applies to the general population, those at increased risk of developing atopic disease, allergic sensitisation or autoimmune disease, or both.
- iv. Do Members have any other comments on systematic review C part II (observation studies) or wish to raise any other matters arising from it?

**Secretariat  
January 2016**

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### Review of risks arising from the infant diet and the development of atopic and autoimmune disease: Systematic review C part II – Dietary Exposures during Pregnancy, Lactation and/or Infancy for Reducing Risk of Allergic or Autoimmune Outcomes: a systematic review and meta-analysis (**reserved business**)

The following annexes are attached to this report:

- Annex 1: Dietary Exposures during Pregnancy, Lactation and/or Infancy for Reducing Risk of Allergic or Autoimmune Outcomes: a systematic review and meta-analysis (overarching report).
- Annex 2: Fruit and vegetable consumption during pregnancy, lactation or infancy and risk of atopic disease, allergic sensitisation or autoimmune disease
- Annex 3: Vitamin and mineral intake during pregnancy, lactation or infancy and risk of atopic disease, allergic sensitisation or autoimmune disease
- Annex 4: Fat consumption during pregnancy, lactation or infancy and risk of atopic disease, allergic sensitisation or autoimmune disease
- Annex 5: Consumption of other, non-allergenic, foods during pregnancy, lactation or infancy and risk of atopic disease, allergic sensitisation or autoimmune disease

**Note:** The Committee were provided with a pre-publication copy of the work of Imperial Consultants. This was received in confidence and will not be released when this paper becomes publicly available. As indicated, above the work will be submitted for publication following peer review.