

## COMPLEMENTARY FOODS

Weaning describes the period where an infant transitions from a milk-based diet to one made up of a variety of foods and drinks that complement the milk portion of the diet. For this reason, foods consumed during weaning are often called 'complementary foods'.

Complementary foods offer parents and caregivers a safe, nutritionally appropriate and convenient option to support the feeding of infants aged between 6 and 36 months.

### What are Complementary Foods?

- ◆ Complementary foods, also known as 'weaning foods' or 'baby foods', facilitate the transition from a liquid diet based on breastmilk and/or infant formula, to one which includes solid foods. In the UK it is recommended that complementary feeding occurs at around 6 months of age.
- ◆ Specialist legislation is in place to ensure that all complementary foods are safe and suitable to meet the specific nutritional need of infants and young children up to the age of 36 months.
- ◆ This legislation defines complementary foods which are produced by manufacturers as 'processed cereal-based foods and baby foods for infants and young children'.
- ◆ These products can be used as part of a diversified diet and are not intended to constitute the sole source of nourishment of infants and young children.

### Types and Variety of Complementary Foods

- ◆ There are a great variety of products on the market which reflect the widely varied diet and social and cultural circumstances of infants and young children. It is important that babies are introduced to a range of different tastes and textures as part of the weaning process.
- ◆ Manufactured complementary foods can be divided into dry and wet foods. Dry foods include cereals which are made up with either water or milk, rusks, and other finger foods such as biscuits or bread sticks. Wet foods range from composite meals to single constituents (e.g. single taste of fruit or vegetables) and are typically available in jar or pouch formats. Chilled and frozen complementary foods are also available.
- ◆ The introduction of foods should include a selection of foods from all the food groups, including fruit, vegetables, grains, meat and fish (or vegetarian alternatives) to encourage a varied, balanced diet rich in nutrients.<sup>1,2</sup>
- ◆ Commercial complementary foods can provide a variety of tastes and textures to help identify and develop infants' preferences.<sup>3</sup>
- ◆ Infants and young children should only be given foods that are appropriate for their developmental age. The texture can progress from pureed to ground to fork-mashed and eventually to diced foods.

### Legislation

Complementary foods (described in legislation as '*processed cereal-based foods and baby foods for infants and young children*') are tightly regulated and specifically formulated to meet the precise needs and requirements of infants and young children in good health. [Commission Directive 2006/125/EC](#) provides a legal framework for complementary foods, including the legislative requirements for composition and labelling.<sup>4</sup> It also sets down mandatory requirements and restrictions. The Annexes to the Directive provide strict criteria for the levels of protein, carbohydrate, fat, vitamins and minerals, including salt, to be found in specific food categories, and where necessary, maximum and minimum levels are provided.

The legislation is based on advice from the European Food Safety Authority (EFSA). This guarantees a high level of consumer protection and ensures that the appropriate level of information is provided to the parents and carers of infants and young children.

All legislation is driven by scientific research and is established by generally accepted scientific data.

### Updates to the current legislation

Under the Regulation on Food for Specific Groups (FSG), Regulation (EU) 609/2013, the European Commission is required to review the specific compositional and labelling rules for 'processed cereal based foods and baby foods'. This will be based on the most recent scientific data available. Advice from the EFSA is expected in 2018 and is intended to inform the legislation which will replace and update Directive 2006/125/EC expected in 2020.

## Nutritional Content of Complementary Foods

Within Directive 2006/125/EC *Annex I* lays down the essential composition of processed cereal-based foods for infants and young children and *Annex II* lays down the essential composition of baby foods for infants and young children.

The essential composition of complementary foods must be appropriate for the particular nutritional requirements of infants and young children in good health, based on scientific data and recommendations.<sup>5</sup> Carbohydrates (including sugars) as well as fat and proteins are key macronutrients of the diet, essential to fulfil nutritional requirements, as established by generally accepted scientific data.

The nutrient requirements refer either to ready-to-use products, or those which need to be reconstituted as instructed by the manufacturer.

### Sugar

In 2010, EFSA published its Scientific Opinion on Dietary Reference Values for carbohydrates and dietary fibre, which also included sugar. New scientific advice on the daily intake of added sugar in foods is expected from EFSA in early 2020.

The maximum level of sugar permitted varies depending on the type of food. e.g. for processed cereal based food, point 3.2 of *Annex I* sets out that:

*If sucrose, fructose, glucose syrups or honey are added to cereals with an added high protein food which are or have to be reconstituted with water or other protein free liquid;*

*— the amount of added carbohydrates from these sources shall not exceed 1,2 g/100 kJ (5 g/100 kcal). — the amount of added fructose shall not exceed 0,6 g/100 kJ (2,5 g/100 kcal).*

The information in the table below is taken from a study investigating the differences between commercial complementary foods and home-cooked foods.<sup>6</sup>

	Carbohydrates (g/100g)	Of which sugars (g/100g)
Complementary meals: (n=278)	8.4g/100g	2.2g/100g
Home-cooked recipes (n=408)	9.0g/100g	2.3g/100g

1. This demonstrates that sugar levels in manufactured complementary meals are similar to, if not lower than, those found in home-cooked foods;
2. General home-cooked foods, such as stewed fruits, are not specifically formulated for babies thus levels of sugars will not necessarily be in line with those found in Directive 2006/125/EC.

### Protein Content

The Annexes of Directive 2006/125/EC also lay down strict rules on the levels of protein (meat, poultry, fish, offal or other traditional source) that are allowed in complementary foods for infants and young children. The Directive also sets out the rules for the naming of complementary foods, based on the percentage by weight that the protein source provides.

For example, *Annex II* point 1.1 states:

*If meat, poultry, fish, offal or other traditional source of protein are the only ingredients mentioned in the name of the product, then:*

- *the named meat, poultry, fish, offal or other traditional protein source, in total, shall constitute not less than 40% by weight of the total product;*
- *each named meat, poultry, fish, offal or other traditional source of protein shall constitute not less than 25%, by weight, of total named protein sources;*
- *the total protein from the named sources shall not be less than 1.7 g/100 kJ (7 g/100 kcal).*

The 'name' of the product refers to the legal name of the product, which may or may not be the same as the brand name on the front-of-pack.

### Iron

The Annexes of Directive 2006/125/EC lay out a maximum of 3mg of iron per 100 kcal for processed cereal based foods and baby foods for infants and young children. Currently no minimum level is set in legislation so iron levels may vary across products up to 3 mg/100kcal.

### Salt

Sodium salts are in general not permitted and may only be added for technological purposes. The sodium content of 'processed cereal-based foods' shall not exceed 25mg/100kJ (100mg/100kcal). This is equivalent to 0.25g of salt/100kcal.

In 'baby food', the final sodium content in the product shall be either no more than 48mg/100kJ (200mg/100kcal) or not more than 200mg/100g. If cheese is the only ingredient mentioned in the name of the product, the final sodium content in the product shall not be more than 70mg/100kJ (300mg/100kcal).



## Nutritional Composition Analysis

Manufacturers carry out nutritional analysis on each batch of finished product for the main nutritional parameters and have a sampling plan in place for all label claims. These tests are done in-house or at an independent laboratory using accredited methodology.

Nutritional analysis of the finished product is part of the final quality release – products will not be released for sale unless they meet all aspects of the product specification.

Although manufacturers have expert in-house analytical laboratories, whenever more specialised compositional analysis is required they will engage accredited external laboratories recognised for their expertise in specific areas.



## Age of Introduction

Current evidence and policies suggest weaning should begin from between **4-6 months of age**.



- ◆ The current feeding practice in Europe recommends the introduction of complementary foods to the diet of infants and young children from 4 months of age;

Directive 2006/125/EC states that:

*“...the stated age shall not be less than four months for any product. Products recommended for use from the age of four months may indicate that they are suitable from that age unless independent persons having qualifications in medicine, nutrition or pharmacy, or other professionals responsible for maternal and child care, advise otherwise.”*

This recommendation is in line with the EFSA opinion on the appropriate age for introduction of complementary feeding of infants<sup>7</sup> and the European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) position paper on complementary feeding.<sup>8</sup>



- ◆ In 2008 the ESPGHAN stated that weaning should not occur before 17 weeks and should be started by 28 weeks. In 2009, EFSA published its opinion on the appropriate age for the introduction of complementary foods<sup>9</sup> and concluded that the introduction of complementary feeding between the ages of 4-6 months is safe and does not pose a risk of adverse health effects in the short or long-term. It noted the importance of introducing gluten no later than 6 months to reduce the risk of coeliac disease and Type 1 diabetes preferably while still breastfeeding. EFSA noted that for the majority of infants, exclusive breastfeeding provides adequate nutrition up to six months of age, but some infants may also require complementary feeding prior to this in order to support optimal growth and development.



- ◆ The World Health Organisation (WHO) recommend exclusive breastfeeding up to 6 months of age, with continued breastfeeding along with appropriate complementary foods up to two years of age or beyond.<sup>10</sup>



- ◆ The UK's Scientific Advisory Committee on Nutrition (SACN) has stated that there is sufficient evidence that exclusive breastfeeding for six months is nutritionally adequate.<sup>11</sup>

## Pouches

Pouches allow parents to feed their toddlers healthy, safe and nutritious meals when away from the kitchen. Pouches can help to keep food fresh, are light weight and act as a convenient way to keep and transport food safely. However, as pouches typically consist of different material laminated together, they require specialist recycling.

## Quality and Safety of Complementary Foods

<p><b>Instructions for use</b></p> <p>It is mandatory for all food manufacturers to provide instructions for appropriate preparation, when necessary, and a statement as to the importance of following those instructions. Due to the variety of products available on the market it is inevitable that preparation, warming and safety instructions may vary slightly.</p>	<p><b>Safety of complementary foods</b></p> <p>All products for infants and young children are produced under strict controls designed to ensure very high standards of safety and quality. Complementary foods are specially formulated for the different developmental phases of infants and young children and a higher level of safety is applied, to take into account the needs and vulnerability of this group of people.</p>	<p><b>Contaminants</b></p> <p>Contaminants including pesticides and other substances, such as heavy metals, can occur in foods, regardless of whether they have been made at home, or commercially manufactured. Aware of this, industry has vigorous procedures in place to limit exposure.</p> <p>As these foods are intended for use in young children, who typically consume more food per body weight when compared with adults, contaminants and pesticide levels are very heavily regulated. Processed cereal-based foods and baby foods must comply with specific provisions laid down in the relevant measures of EU law on <b>hygiene</b>, on the use of <b>food additives</b>, on the presence of <b>contaminants</b> and on the use of <b>materials</b> intended to come into contact with the products.</p> <p>Directive 2006/125/EC strictly regulates levels of pesticide residues, with a very low limit of 0.01mg/kg – the minimum detectable level. It also prohibits certain pesticides in the production of processed cereal-based baby foods.</p> <p>Generally acceptable standardised methods are used to determine the levels of any pesticide residues. Additional precautions are also taken, with careful selection of ingredients and raw materials so they can be deemed ‘baby grade’.</p>
<p><b>Quality control</b></p> <p>Manufacturers have rigorous protocols in place to ensure the safety and quality of the ingredients used in foods for infants and young children and also the end product. Both ingredients and end products are tested to ensure they are well below the legal maximum limit of pesticides and contaminants permitted by legislation. Weaning foods are completely traceable to their producer and supplier.</p>	<p><b>Microbiological standards</b></p> <p>All finished products are subject to a range of microbiological examinations before they are released for sale – these tests will include pathogens, yeasts, moulds and total plate counts. In addition to nutritional and microbiological QC tests there will be a range of organoleptic tests to ensure the odour, flavour, colour and texture of the product is within specification.</p>	<p><b>What does the term ‘baby grade’ mean?</b></p> <p>Manufacturers take their responsibility very seriously and often put in place stricter rules than are required by legislation; they will often be particularly stringent as to where fresh ingredients are grown or originate from. The term ‘baby grade’ is used to refer to ingredients which are produced at a chosen farm in suitable soil away from contaminants and under strict guidelines that ensure pesticides, pollution, nitrates and other contaminants are kept to a minimum.</p>
<p><b>Shelf-life</b></p> <p>Tests are carried out at the product development stage to confirm the shelf-life that will be labelled on the product. All complementary foods are labelled with a best before date which will ensure that the organoleptic properties (i.e. qualities relating to taste, colour, odour and feel) and nutritional quality of the product remains satisfactory for the duration of the shelf-life.</p>	<p><b>Hazard Analysis at Critical Control Points (HACCP)</b></p> <p>HACCP is an internationally recognised method to manage food safety. All food manufacturers are required by EU food hygiene legislation to implement and maintain hygiene procedures based on HACCP principles. Companies operate to internationally recognised ISO and/or AOAC safety and operating standards e.g. ISO 9000, ISO 22000, ISO 22002 and others, and undergo external auditing to secure certification to these standards.</p>	<p><b>Compliance</b></p> <p>Manufacturing facilities are subject to Food Safety Act inspections by local authorities. Local authorities can also ask to examine all production records, quality release documentation and laboratory results.</p>
<p><b>Traceability</b></p> <p>Manufacturers are required to have fully traceable procedures in place which detail where each batch of produce is distributed to following dispatch from their own warehouse.</p>	<p>Examples of critical control points could include heat treatment, metal detection, weighing, sieves and scoop dispensers. The nature of Critical Control Points will depend on the type of product being manufactured and the processing conditions.</p>	

[1] Pan American Health Organization and World Health Organisation. Guiding principles for complementary feeding of the breastfed child. Washington DC: PAN American Health Organization and World Health Organisation, 2003 [2] World Health Organisation. Guiding principles for feeding non-breastfed children 6-24 months of age. Geneva: World Health Organisation, 2005 [3] Hoddinott P, Graig L, Britten J *et al.* (2010) A prospective study exploring the early infant feeding experiences of parents and their significant others during the first 6 months of life: what would make a difference? Edinburgh: NHS Health Scotland. [4] Commission Directive 2006/125/EC on processed cereal-based foods and baby foods for infants and young children [5] Recital 4 of the draft Commission delegated regulation as regards the specific compositional and information requirements for processed cereal-based food and baby food [6] Carstairs SA, Craig L, Marais D *et al* (2016) A comparison of prepared commercial infant feeding meals with home-cooked recipes. *Arch Dis Child* 0:1-6 [7] EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA), Scientific Opinion on the appropriate age for introduction of complementary feeding of infants. *EFSA Journal* 2009; 7(12): 1423 [38pp]. doi:10.2903/j.efsa.2009.1423. [8] Agostoni *et al.* (2008): Medical position paper: *Complementary Feeding: A Commentary by the ESPGHAN Committee on Nutrition*, *JPGN* 46:99–110, 2008 [9] <http://www.efsa.europa.eu/en/efsajournal/doc/1423.pdf> [10] World Health Organisation (WHO) Breastfeeding <http://www.who.int/topics/breastfeeding/en/> [11] Scientific Advisory Committee on Nutrition 2001 Minutes September 2001 [www.sacn.gov.uk](http://www.sacn.gov.uk)