

HOW AND WHY F&V MUST BE IN COMPLEMENTARY FEEDING?

- ▶ Complementary feeding (CF) is a transitional period during which infants over a period of about 2 years gradually consume foods other than human milk or formula milk. WHO recommends to start weaning after 6 months of age¹. Alternatively, recent recommendations by ESPGHAN* suggests that exclusive or full breast-feeding should be promoted for at least 4 months (17 weeks, beginning of the 5th month of life), but also states that exclusive or predominant breast-feeding for approximately 6 months (26 weeks, beginning of the 7th month) is a desirable goal².
- ▶ CF period is very important to offer energy and nutrients of quality and quantity suitable for the needs and growth of the infant. It will also help introducing and encouraging the infant to accept new foods with different flavors and textures³.
- ▶ CF also represents a sensitive phase because diet has long-term effects on chronic non-communicable diseases including later obesity via the quality and the quantity of energy intake and nutritional balance³.
- ▶ Parents report to be concerned about the possibility of infants becoming overweight and consider health care providers to be an important source of information on infant weight status⁴.

Recommendations for complementary feeding

Food recommendations for CF should be **differentiated between breast-fed and formula-fed infants** since the nutrients content, the taste and the health effects of human milk and formula milk are not the same² (Table 1).

▶ Table 1 : Comparison between human milk and formula milk⁵⁻⁸

	HUMAN MILK	FORMULA MILK
Nutrient content	Lower protein content than formula milk	Higher protein content as it is suitable for less absorption compared to human milk
	Presence of multiple biological factors of growth regulation and an anti-infectious protection	
	Presence of hormones and peptides regulating the appetite (ex. leptine)	
	Lower content in well absorbed iron (34%)	Higher iron content in starting formula, increasing in the follow up formula
Taste	Different flavors according to food eaten by the mother	Always the same flavor
	Indirect habituation to maternal and family diet and facilitation the introduction of these flavors	
Consistence	Shifts from a watery consistence when starting to suckle to a more nutrient-dense form at the end of the feeding	Constant composition
		Moderate increase in iron and protein intake in second stage formula
Long-term health effects on infants	Promotes the development of subcutaneous adipose tissues as opposed to visceral tissue	Difference in body composition with the possibility of higher BMI
	Partial protective effect on cardiovascular risk and obesity until the end of childhood	
	Small protective effect against hypertension in later life	

As stated above, breast-feeding for approximately 6 months (26 weeks, beginning of the 7th month) is a desirable goal. In any case, with or without personal or family allergic background, **CF shouldn't be started before 4 months** of age due to the risk of allergies, and **not after 6 months** because breast and formula milk can no longer meet alone the nutritional needs and development of the infant. There is no reason to delay diversification for children at risk of allergy beyond 6 months, including food allergens (eggs, fish, wheat, etc.)⁹. In case of food allergy, introduction of CF should be guided by a pediatrician or a pediatric allergology unit. Gradually, the infant becomes able to swallow food from spoon that will be suckled until about 6 months when swallowing movements of the tongue appear. At 9 months appear the chewing movements¹. That's why parents should start with small amounts of food and increase gradually as the child gets older with a step-wise increase in food consistency and variety, in complement to breastfeeding (≤ 500 ml/d of milk) until 2 years of age or beyond.

It's highly recommended to feed infants slowly and patiently, and encourage them to eat without forcing them. Good hygiene and proper food handling are also required¹.

Foods are usually introduced during lunch¹⁰.

1. Fruit and vegetables

F&V are required because of their high nutritional profile, low-energy density and satietogenic effect (due to their high content in fiber) which is beneficial for both overweight and lean infants^{11, 12}. For both breast-fed and formula-fed infants, F&V should be introduced to broaden the perception of flavors since the beginning of CF.

CF should begin with vegetable to ensure their appreciation. After 15 days, fruits are introduced, often preferred by infants due to their sweet flavor¹³.

When starting CF, parents can introduce vegetables that are well tolerated by the child by testing them one by one¹⁰ (Figure 1).

Infants exposed to a greater variety of vegetables during CF have been shown to also consume a greater variety at 6-year follow-up¹⁴. During CF, a strong “food learning” process has to take place to develop healthy eating habits. At least 8 repeated exposures to F&V may be necessary in order to accept novelties and acquire preferences. It’s preferable to introduce only one fruit or vegetable at a time to let the child get used to the taste, to test the tolerance and adapt the strategy in case of apparent refusal^{3, 15}. Importantly, CF is never at the expense of milk: F&V are added to milk which gradually evolves (appearance of dairy products, cheese).

The acceptance rhythm can vary a lot from one child to another^{10, 16}. Starting with little pieces of starchy food, facilitates their solubilization and acceptance.

2. Protein foods

High proteins intake in infancy, induces a deleterious high renal workload and seems to be associated with an increased fat mass at different ages and the risk of developing obesity later on¹⁴. Therefore, scientifically based recommendations for infant formulas and follow-on formulas have been adapted in regard to adequate calcium, vitamins and nutrient contents¹⁷.

3. Fats

Infants and young children have higher needs in lipids than older children and adults. The lipid families must be balanced with

one another and provide the fatty acids, including docosahexaenoic acid (DHA), in the recommended proportions. The decrease in lipids intakes will be progressive with the transition to the family diet between 2 and 3 years old. CF, like pregnancy, is a key moment to change habits and adopt a healthy diet for the whole family.

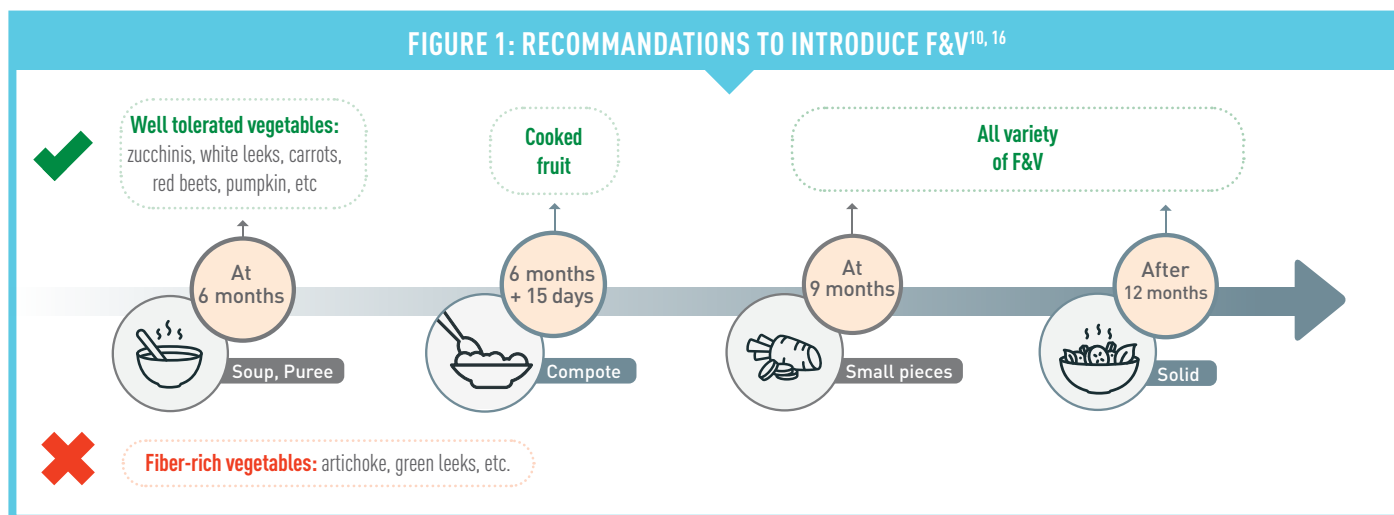
4. Drinks

When new foods are introduced, infants should drink water according to their thirst. Only water is recommended, other sweetened drinks, sodas, fruit juices, vegetable milks and teas are not nutritionally recommended^{18, 19}.

COW'S MILK

Postponing the introduction of cow's milk until or even beyond the end of the first year is recommended because its composition, in particular in iron, proteins and phosphorus, is unsuitable for young children²⁰. Young child formulas overcome this inconvenience²¹.

FIGURE 1: RECOMMANDATIONS TO INTRODUCE F&V^{10, 16}



Model of complementary feeding: Traditional vs Baby-led weaning

During recent years, another model of weaning has arisen: “baby-led weaning”. This model is based on the concept that infants at 6 months choose which foods and how much to eat from a plate of varied finger foods (except foods with obvious danger, like peanuts). It emphasizes on exploring taste, texture, color and smell.

However, data are lacking on whether infants who are fed CF using this approach obtain sufficient nutrients, including energy and iron, or eat a more diverse range of foods²². Given this lack of scientific data, baby-led weaning is therefore not recommended²³.



For further information:
→ sheet 12 “F&V: energy, nutrients and claims”