



Dietary diversification A natural need

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Pre weaning

- **In Utero**: 24 hrs parenteral nutrition
- **Birth**
 - Cycling
 - Milk = water + nutrients + energy

Eat if thirsty
Drink if hungry

- **Breast milk** : nutritional and taste changes
- **Formula**: same diet during 4 months

Weaning

- Introduction of complementary foods in addition to milk
- 4 to 6 months of age
- Not before 4 months
 - Unnecessary
 - Induction of food allergy
- Not after 6 months
 - Nutrient and energy intakes from milk insufficient

Weaning physiological constraints

Baby's eating capabilities

- **Suckling alone:** 0 - 6 months
- **Swallowing a spoon content :** ≥ 6 months
- **Chewing :** ≥ 9 months

Food consistencies

- Liquid -> lumpy -> small pieces

Digestive tract capabilities at 4 months

- Mature for protein, soluble CHO, lipids
- Insufficient for CHO with high contents in insoluble fibres (legumes such as lentils, beans...)

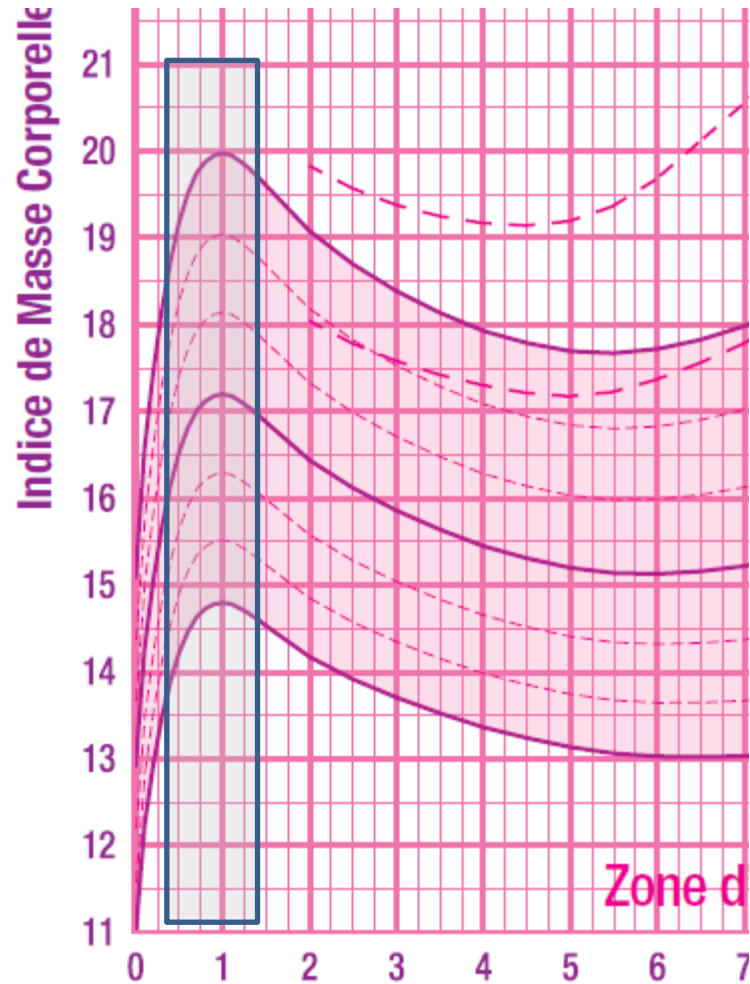
Diversification allows body composition regulation in infants and toddlers

BMI (kg/m²)

BMI reflects fat mass

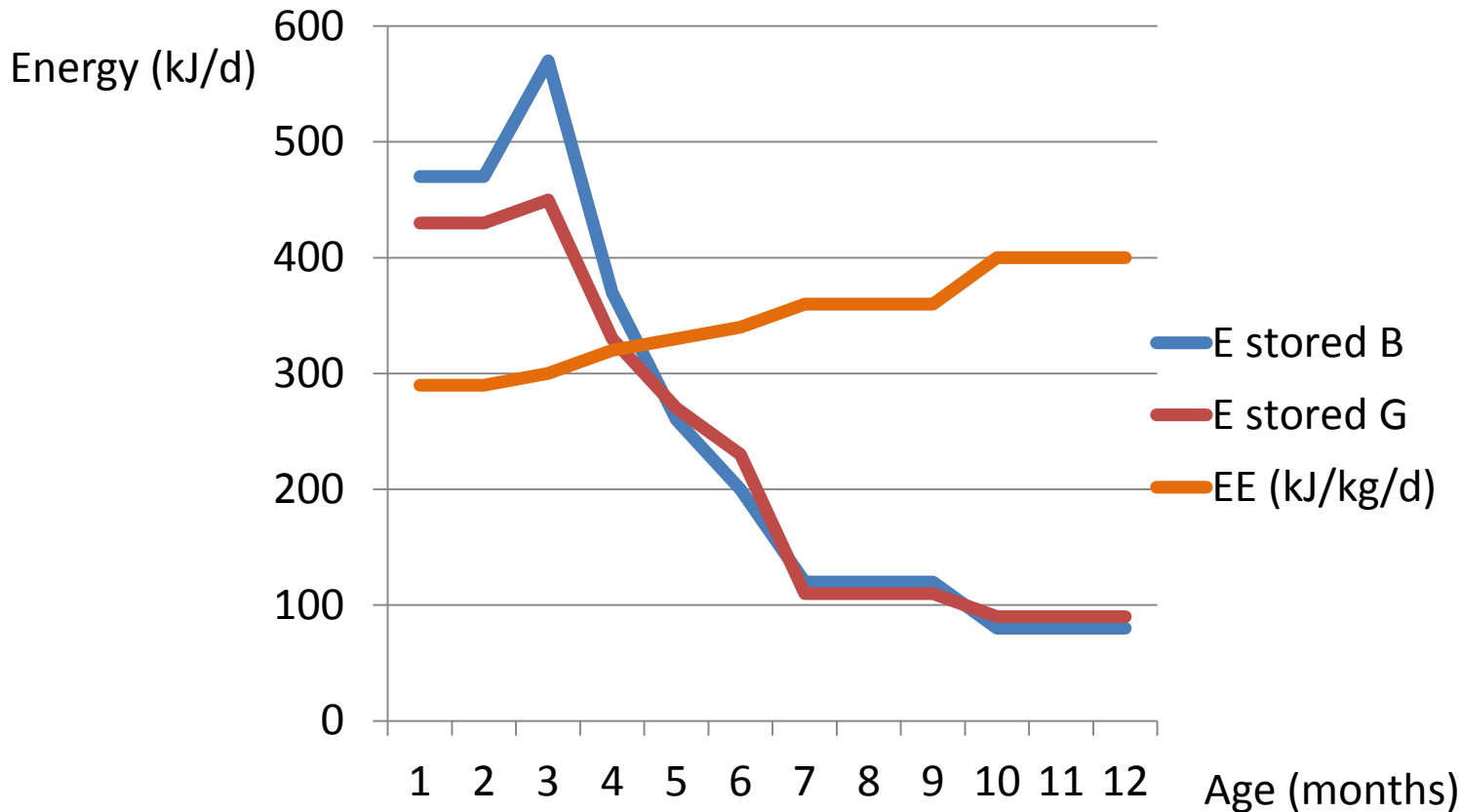
Birth Weight

x 2 at 6 months
X 3 at 1 yr



Age (months)

Energy use between birth and 1 yr of age in healthy full term babies



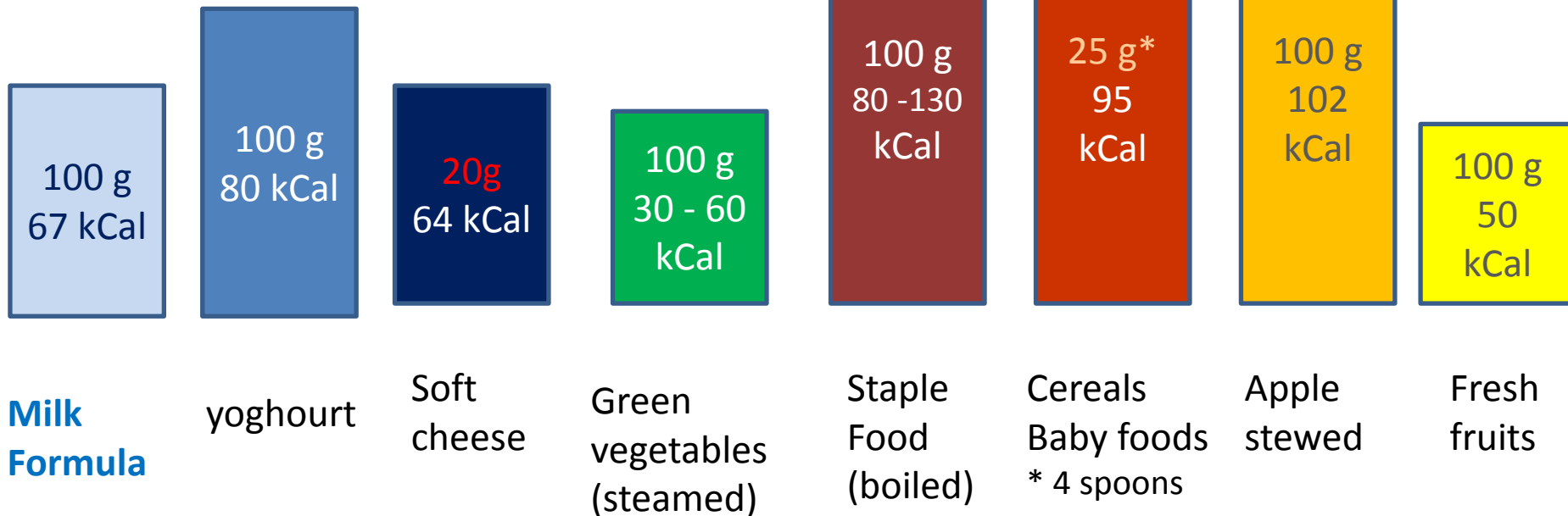
From : CNERNA CNRS Apports nutritionnels conseillés pour la population française, 3ème édition.

Weaning and food choices

A key opportunity to enhance appetite regulation

700 to 950 ml

470 to 650 kCal/d



Weaning

The importance of the type of foods

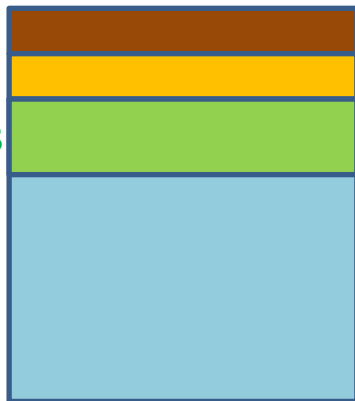
Small milk drinker

180 -210 ml X 4

Good milk drinker

240 ml X 4

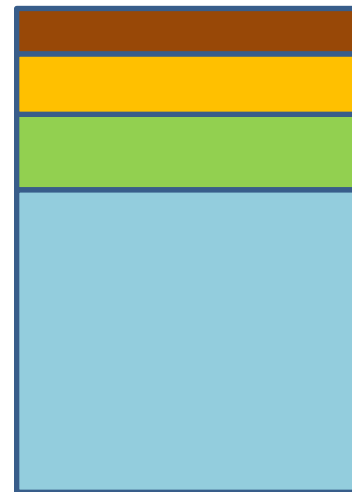
CHO
Fruits
Vegetables



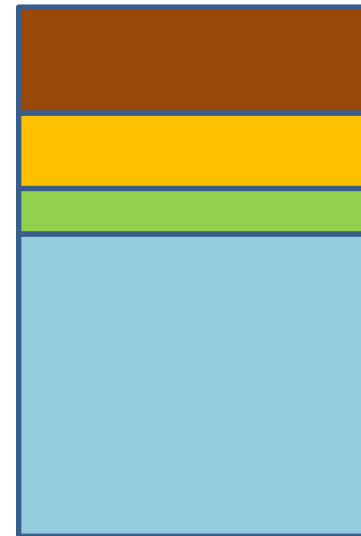
Small drinker
Good eater



Small drinker
Small eater



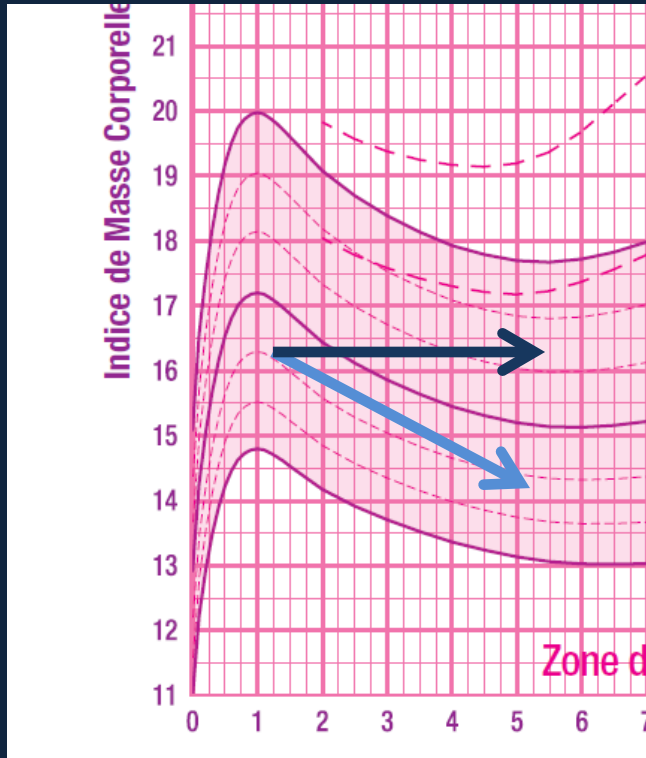
Good drinker
F&V



Good drinker
Low F&V

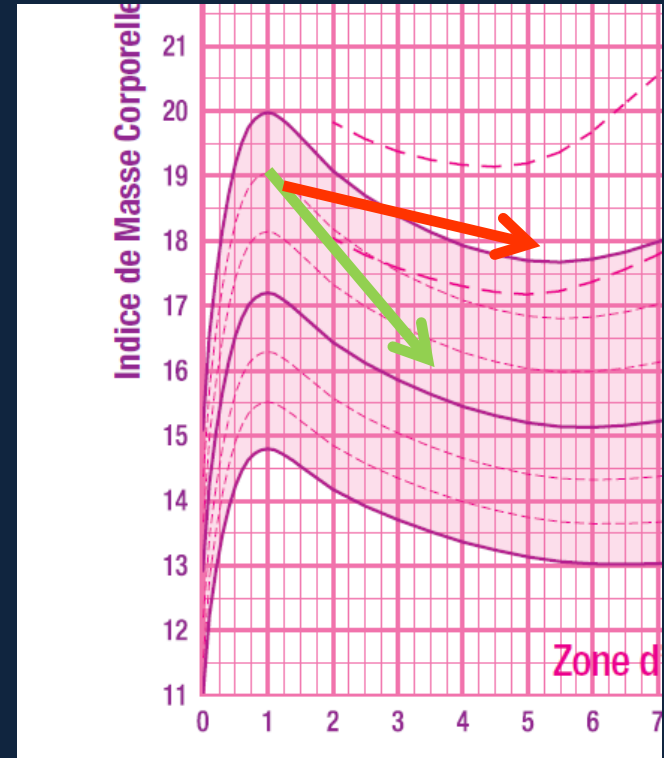
Diversification vs babies' appetite pattern: clinical evidences

Low appetite
Low calorie density
Fruit & vegetables



Low appetite
Low calorie density
Fruit & vegetables
Starch

Good appetite
Low calorie density
Fruit & vegetables



Good appetite
High calorie density
Fruit & vegetables
Starch

Starting the road to later health

- **Diversification**
 - Takes place when milk alone will become insufficient to provide adequate growth
 - In a window of time where babies are especially likely to accept novelties
 - Allows to distinguish between thirst and hunger
- **Fruits and vegetables** are mandatory because of
 - Their nutrients profiles but low Na contents
 - Fibres and water contents
 - Variety of tastes
 - Later role in health status
- **Starchy foods** (staple or baby's cereals) intakes
 - have to be adapted to growth pattern
- **Addition of selected fat sources and amounts**
 - are crucial in all cases, in addition to milk contents, beyond 6 months of age