

## Which kind of water should our baby drink?

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Regarding water, there are two questions which usually come into the parents' mind.

### Should we give water to a child who only breastfeeds?

A baby who only admits breastfeeding does not need any additional water but if he vomits, he suffers from diarrhoea or in the summertime due to minimal losses because of sweating.

Babies who drink from correctly prepared feeding bottles do not need additional water either but for an increase in their losses. They should be given water as soon as they begin to eat and drink different substances than milk.

### Which kind of water is the most suitable for the baby?

We must analyse the quality and the amount of minerals that water coming from the tap has as well as bottled water.

The quality or drinkability of water coming from a tap must fulfil some public health requirements and is regulated by some institutions: Environment Protection Agency of the USA, World Health Organization (WHO) and European Union (EU) and, in Spain, according to the BOE (Decree 2003 by means of which the health requirements of water for human beings are established). Water must not contain viruses, bacteria or parasites which can be damaging for anybody's health. Likewise, it must not contain mercury, hydrocarbons, pesticides, organ-chlorine products and it must not be radioactive.

The content of mineral in water is influential for its flavour and its "hardness", the recommended concentrations are in mg/l: calcium 100, magnesium 30, chloride 25, sulphates 25, sodium 20, potassium 10, fluorine 1, aluminium 0.05.

As far as the preparation of a feeding bottle is concerned, we should know the concentration of minerals in the water of our region in order to (in areas where the level of sodium and calcium is high) avoid overloading the baby's kidney since it is still young and does not filter the excess of minerals properly.

The water coming from taps fulfil the requirements to be considered as drinkable and appropriate to be consumed by a population, it is safe and can be used to prepare a

feeding bottle for babies.

Generally, thanks to the purification system, water is freed from bacteria and viruses. The use of ultra-filtering systems also guarantees that water is free from parasites. If in the area where you live, water is appropriate for human consume, it can be used directly from the tap, no need to boil it. When necessary, it can be boiled but flavour gets worse and dissolved salts get concentrated. In this case, the WHO recommends to boil it for a minute (adding one more minute for each 1000 metres above the sea level). It is not necessary to boil it for ten minutes as it has been observed an increase in the concentration of sodium and calcium (it can provoke an overload of kidney solutions) as well as of nitrates (it may cause methemoglobinemia).

If there are some doubts, bottled water appropriate for babies consume can be used, if it contains few salts (scarcely mineralized).

Bottled water can be of several kinds: (Figure 1)

1. Natural mineral waters
2. Spring waters
3. Prepared waters
4. Packed waters for public consume

### Figure 1. Packed waters

#### Natural mineral waters.

They are safe and come from an underground deposit. They differ from the rest of waters because of their original purity and its content of minerals and oligo-elements. Sometimes it is considered they have positive benefits for health (non therapeutic properties).

#### Spring waters

They are drinkable, their origin is deposits as well and they can emerge spontaneously or be extracted.

#### Prepared waters

They have been physically and chemically treated to fulfil the requirements of water for human consume. They can come from springs or public prepared sites.

#### Packed waters for public consume

They are drinkable, packed to make up for the problems of public waters.

All packed waters are regulated and must follow a regulation (Decree 2002 and 2003 by means of which the elaboration, circulation and trade of packed waters).

This regulation establishes that packed waters cannot contain any kind of microorganism, parasite or substance which may cause risk for anyone's health so they all are safe (no bacteria) and there is no need to boil them to prepare the feeding bottle.

Regarding which brand to choose, the concentrations of sodium, fluoride, calcium and nitrates is to be taken into account (Figure 2)

- Sodium. It is the main feature to take into consideration in the water which is used to prepare a feeding bottle. The kidney from babies younger than 4-6 months has less capacity of sodium expulsion so that in this age, to avoid a kidney overload, water should have less than 20 mg/l of sodium to prepare the starting formula or type 1.

From 6 months onwards, kidneys have become mature and expel sodium better so that water to prepare formula type 2 can contain up to 50 mg/l of sodium.

- Fluoride. For babies of less than a year old, water must contain less than 0.3 mg/l of fluoride and for babies older than a year old, less than 1 mg/l to avoid risk of a bad mineralization of the enamel due to an excessive quantity of fluoride.

- Calcium. It has not been proved that hard water, richer in calcium, are bad for babies' health and calcium from water is an useful component together with calcium from milk for the babies' bones. Hence, it is to correct to use bottled waters with 50-100 mg/l of calcium.

- Nitrates. In babies, nitrates become nitrites and nitrites oxidize haemoglobin generating methemoglobin, which cannot carry oxygen to the tissues. This causes cyanosis or "blue child syndrome". The maximum concentration of nitrates allowed in packed water is 50 mg/l and, ideally, it should be less than 25 mg/l.

ride, calcium, chloride, potassium, magnesium, sulphates, nitrates and bicarbonate can be seen in: <http://www.aguinfant.com/AGUAS-ESP/excel-datos/Espana-sodio.htm> and packed waters recommended with starting formulas in: <http://www.aguinfant.com/AGUAS-ESP/ABC-DARIO/vista-rapida.htm>

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**Figure 2. Recommended features in packed water for infants in breastfeeding period**

Component	Recommended amount
Sodium	< 6 months (for formula type 1): < 20 mg/l > 6 months (for formula type 2): < 50 mg/l
Fluoride	< 1 year: < 0.3 mg/l > 1 year: < 1 mg/l
Calcium	50 – 100 mg/l
Nitrates	< 25 mg/l (allowed < 50 mg/l)

Water brands of packed water in Spain with their features regarding kind of water, concentrations of sodium, fluo-