

Systemic Fluoridation

Fluoride Supplements



Where drinking water low in fluoride cannot be fluoridated, fluoride tablets were introduced. Fluoride supplements were originally designed to provide the systemic fluoride that a child would not consume living in a non-fluoridated area. However fluoride supplements can be prescribed for children ages 6 months to 16 years who are at 1-high risk for tooth decay and 2-whose primary drinking water has a low fluoride concentration.



Fluoride tablets became the method of choice for fluoride supplementation. Fluoride supplements should **only be prescribed by dentists** where there is clear evidence for high risk of caries and non-compliance with using other fluoridated products.

Supplements contain a measured amount of fluoride typically 0.25mg, 0.5mg, and 1mg usually as sodium fluoride and it should only be prescribed by dentists where there is clear evidence for high risk of caries and non-compliance with using other fluoridated products; and the parents must be cooperative.

2.2 mg sodium fluoride tablet gives 1mg ion fluoride, and 1.1 mg sodium fluoride tablet gives 0.5mg ion fluoride.

The American Dental Association (ADA) Recommended Fluoride Supplementation Schedule

Age	Fluoride supplement dosage according to fluoride in the drinking water (parts per million ppm)		
	<0.3ppm	0.3–0.6pp	>0.6ppm
Birth to 6 months	None	none	None
6 months to 3 years	0.25 mg/day	none	None
3 to 6 years	0.5 mg/day	0.25 mg/day	None
6 to 16 years	1.0 mg/day	0.5 mg/day	None

Instruction to use fluoride supplement (tablet or lozenges or drop):

- **If fluoride level is unknown, drinking water should be tested for fluoride content before supplements are prescribed.**
 - **Fluoride supplement indicated to children living in area with none or low level of fluoride in water. Especially children with high risk to dental caries, children with chronic systemic disease and handicapped children.**
 - **Fluoride supplement is daily used from 6 months to 16 years to give their maximum effect (To obtain the benefits from fluoride supplements, long-term compliance on a daily basis is required).**
 - **To maximize the topical effect of fluoride, tablets and lozenges are intended to be chewed or sucked for 1–2 minutes before being swallowed.**
 - **Before considering supplementing fluoride, it is relevant to take into account the natural sources of fluoride in food and drinking**
- **It has also been shown that when exposure to fluoride is discontinued, its caries-reducing effect gradually wanes. This is entirely logical, because fluoride is affecting the dynamics of lesion formation.**
- **Fluoride supplement Should not be given with milk.**

Fluoride supplement during pregnancy until dental formation is completed through pharmaceutical products, i.e. tablets or drops, according to variable doses (0.25 and 1 mg). During pregnancy and breast feeding, mothers should take 1 mg a day. In fact, theoretically, during intrauterine life, the fluoride taken by the mother may work in the pre-eruptive phase, during the amelogenesis of deciduous teeth with a consequent beneficial effect on the newborn's deciduous teeth. Fluoride passes through the placenta freely, until it reaches excessively high levels in the mother's blood, and thus triggers this passage (barrier effect) to protect the foetus from excessive doses. The threshold concentration that pushes the placenta to trigger this function is 0.4 ppm of fluoride in maternal blood . Some Authors consider the systemic administration of fluoride as a further supplement during pregnancy, as it is identified as the first step to caries prevention.

The children until they are old enough to swallow use Fluoride supplement as Fluoride Drops; they are available as 0.125mg, 0.25mg, 0.50mg drops . 10 drops equal to 1mg, if 10 drops placed in a liter of water the result concentration of 1ppm of fluoride



Fluoridated salt

Where water fluoridation could not be initiated, some countries have introduced salt fluoridation. Salt is usually fluoridated at 250 ppm (which is 250 mg F/kg salt, or 0.25 mg/gm salt). Table salt in the kitchen can contribute 1 to 4 g of the daily salt intake. Thus, a person could potentially ingest 1 mg of fluoride a day at a salt intake of 4 grams a day.

Advantages:

- 1- Wide coverage
- 2- Need little action by the individual
- 3- Low cost
- 4- Freedom for the consumers as both fluoridated and non-fluoridated salt is available
- 5- It is safe
- 6- Minimum possibilities of fluorosis.

Disadvantages:

- 1- Salt fluoridation need community education and promotion.
- 2- International efforts to reduce sodium intake to help control hypertension.
- 3- Consumption of fluoridated salt is lowered during early life when the need for fluoride is the maximum

Fluoridated milk

Milk fluoridation is the addition of a measured quantity of fluoride to bottled or packaged milk to be drunk by children .both bovine and human milk contain low level of fluoride about 0.03ppmF. Milk fluoridation is suggested instead of water fluoridation.

Fluoridated milk promotes remineralisation of lesions in enamel *in vitro* and *in vivo*, and inhibits demineralisation in enamel and dentine. Milk itself has a protective effect in intra-oral caries models as well as *in vitro*

Disadvantages:

1- Consumption of milk varies between different socioeconomic groups

2- Consumption decrease with age so long term benefit is less than water fluoridation

3- Require high level of technical expertise.

– A high concentration of fluoride is needed for two reasons:

(1) the children did not drink the beverage throughout the day.

(2) calcium in the milk complexes with fluoride, which would reduce its availability for topical benefits.

Thank You!

