

## THE IMPORTANCE OF FLUORIDE IN CARIES

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**Abstract:** Caries, generally known as tooth rot or dental cavities, is a predominant oral medical problem influencing individuals of any age around the world. To battle this dental issue actually, the utilization of fluoride has been generally perceived as quite possibly of the most fundamental preventive measure. Fluoride, a normally happening mineral, has shown to be exceptionally powerful in lessening the pervasiveness and seriousness of caries. This article digs into the meaning of fluoride in caries counteraction and investigates its different advantages.

**Keywords:** Caries, effects, technologies, youngsters, connection, results, illness.

**Introduction:** Dental caries is quite possibly of the most pervasive persistent illness, influencing almost 60 to 90% of the total populace. In the US, dental caries is the most well-known persistent illness among youngsters. It results from the connection of microbes, fermentable starches, and host factors over the long run. Dental caries is a non-transmittable illness (NCD); it shares way of life factors related with different sicknesses like heftiness and diabetes.

Fluorides assume a focal part in the counteraction of dental caries and are likewise utilized remedially for the inactivation of nascent carious sores. The impact of fluoride is chiefly accomplished when applied topically, which is additionally improved when joined by great oral cleanliness.

Since the execution of water fluoridation, there has been a reduction in the predominance of dental caries. The gamble of dental fluorosis is fundamentally connected with the foundational utilization of fluorides during the initial six years of age.[6] Notwithstanding, early openness to fluoride toothpaste has likewise been connected to dental fluorosis because of accidental gulping. This hazard ought to be thought about while choosing the centralization of fluoride toothpaste for small kids. Fluoride-containing items, including toothpaste, flushes arrangements, gels, froths, and stains, are demonstrated by age and hazard of caries.

Fluoride applies its enemy of cariogenic activity when controlled topically through three components: 1) it restrains tooth demineralization, 2) it advances tooth remineralization, and 3) it hinders plaque microbes. Fluoride in drinking water and fluoride-containing items like toothpaste, mouthwash, and stain work through these systems. At the point when fluoride is regulated foundationally as enhancements (drops, tablets, and capsules), the impact on caries insurance is negligible.

### Fluoride Represses Demineralization

As recently referenced, fluoride integrated into the polish gem structure at the tooth formative stages doesn't adequately affect the corrosive solvency of lacquer. Notwithstanding, the fluoride present in the biofilm because of standard effective openness and encompassing the carbonated apatite precious stones (finish gems) successfully represses tooth demineralization.

At the hour of bacterial corrosive creation, the fluoride in the plaque liquid goes down with the corrosive into the polish sub-surface, adsorbs into its precious stone construction, and safeguards it against disintegration. Fluorapatite  $\text{Ca}_{10}(\text{PO}_4)_6\text{F}_2$  is a polish mineral substantially more impervious to corrosive disintegration than other tooth minerals (carbonated apatite and hydroxyapatite). Fluorapatite comes about because of supplanting the Goodness particle in hydroxyapatite with a fluoride particle.

## Fluoride Advances Remineralization

During the ordinary course of remineralization, the corrosive delivered by microorganisms is killed by the spit's buffering activity, halting the disintegration of veneer minerals at the subsurface. Also, calcium and phosphate are supersaturated in spit, driving the minerals once again into the dental construction. The to some extent demineralized gems capability as cores for additional remineralization.

Fluoride improves tooth remineralization by speeding up the development of fluorapatite precious stones on the somewhat demineralized sub-surface gems in the carious sore. Fluoride adsorbs into this surface and draws in calcium particles. Thus, this new surface draws in specially more fluoride, bringing about a fluorapatite-like surface. Along these lines, it is less solvent in plaque acids.

## Fluoride Restrains Plaque Microbes

Fluoride particles (F-) can't cross the bacterial wall, however at low pH values (when microbes produce acids), the fluoride particles (F-) travel through the cariogenic bacterial cell wall as HF. When inside the cell, the HF separates again into H<sup>+</sup> and F-particles, acidifying the bacterial climate and repressing the chemical, enolase, and movement, individually. This cycle is aggregate.

Local area water fluoridation has been utilized for over 50 years, and results show that the best impact of fluoridated water on tooth assurance is in deciduous and blended dentition. Water fluoridation is a basic, savvy strategy to forestall caries, and it is not exactly the expense of one dental reclamation for every individual in the course of their life. The US General Wellbeing Administration suggests a fluoride grouping of 0.7 mg/L of water to forestall caries while diminishing the gamble of dental fluorosis.

As of late there has been an ascent in the utilization of filtered water that typically contains a deficient grouping of fluoride. All things considered, elective wellsprings of fluoride supplementation ought to be thought of. Additionally, throughout the long term, the defensive advantages of water fluoridation have declined as different types of fluoride conveyance spread. For instance, fluoride supplements are endorsed for kids whose essential wellspring of drinking water is lacking in fluoride.

It is energetically suggested by the US Preventive Administrations Team (USPSTF) that essential consideration suppliers (PCPs) recommend fluoride supplements beginning at a half year old enough to newborn children whose essential water source is deficient in fluoride. Fluoride supplements remember the foundational ingestion of fluoride for the type of dietary tablets, capsules, or drops.

## Dietary Fluoride Enhancements

Dietary fluoride enhancements might be tablets, capsules, or fluids like fluoride-nutrient arrangements. Tablets and capsules contain 1.0, 0.5, or 0.25 mg fluoride focuses, and sodium fluoride is typically the dynamic fixing. For newborn children, fluid fluoride supplements are utilized with a dropper. For kids and grown-ups, tablets are recommended by dental specialists and PCPs, with directions to bite or suck for 1 to 2 minutes before they are gulped. This is to expand the effective impact of fluoride. One review showed a 80% decrease of caries in youngsters who disintegrated fluoride in the mouth by sucking or biting than the people who gulped the fluoride tablets.

Fluoride supplements have been endorsed to make up for fluoride-insufficient water consumption. Consequently, cautious thought should be given to the level of fluoride content in savoring water the patient's district and any extra wellsprings of fluoride the patient is getting, for example, toothpaste and mouth flush.

For kids at high gamble of caries residing in regions where the drinking water contains under 0.3 ppm F, everyday supplementation of fluoride might be suggested as follows:

From a half year to three years old: 0.25 mg of fluoride each day.

From three to six years old: 0.5 mg of fluoride each day.

Over six years old: 1.0 mg of fluoride each day.

### Fluoride Toothpaste

Fluoride toothpaste conveys fluoride to dental surfaces, and it presents mostly as sodium fluoride (NaF). It has been powerful in caries counteraction of both essential and long-lasting teeth for quite a long time. Brushing with fluoride toothpaste expands the fluoride fixation in spit by 100-to 1,000-overlap. Following one to two hours following utilizing fluoride toothpaste, the spit fixation gets back to the benchmark level.

Toothbrushing should begin when the main tooth emits, as a rule as soon as a half year. Brushing two times every day with fluoride toothpaste brings down the gamble of dental caries by 14%. Productive plaque expulsion is feasible just while toothbrushing is regulated in youngsters under four.

Fluoride toothpaste containing 1,000 ppm of fluoride forestalls dental caries in the extremely durable and essential dentition. In the US, the standard grouping of fluoride in toothpaste is 1,000 to 1,100 ppm. Portions of 1,350 ppm to 1,500 ppm are informed for kids at high gamble with respect to creating caries and seven years old upwards.

In the early long periods of life as a youngster, the gulping reflex of kids isn't very much controlled. Hence, toothpaste containing 1,500 ppm fluoride is contraindicated in youngsters under six to limit the gamble of fluorosis due to gulping. The suggested measure of toothpaste for toothbrushing as per age is just a smear of toothpaste in youngsters under three years and from three to six years old a pea-sized sum.

The greatest portion of fluoride toothpaste available without a prescription in many nations is 1,500 ppm. Higher sums (2,800 ppm and 5,000 ppm) are accessible on remedy. In any case, the sign of higher dosages ought to be carried out as a momentary mediation to decrease risk in weak youngsters and grown-ups while different measures are being taken, such as changing a cariogenic diet.

Then again, patients at high constant gamble of dental caries could profit from involving such high dosages as long as possible, e.g., those with xerostomia or physical or learning incapacities. Sodium fluoride 2,800 ppm toothpaste can be demonstrated from 10 years old and 5,000 ppm from 16 years old.

**Conclusion:** Fluoride assumes an essential part in relieving the predominance and seriousness of caries by fortifying tooth lacquer, restraining bacterial action, decreasing corrosive creation, advancing salivary capability, and safeguarding weak teeth. Integrating fluoride into our oral consideration schedules and looking for proficient fluoride therapies can altogether upgrade our protection against tooth rot and work on in general oral wellbeing. Keep in mind, counteraction is in every case better compared to fix, and fluoride is without a doubt an imperative device in the fight against caries.

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