

True or Fake on fluoride

Fluoride: Distinguishing Fact from Myth

Fluoride is a fundamental agent in the prevention of dental caries.

Nevertheless, concerns are sometimes raised regarding its potential adverse effects on health.

This true/false resource aims to provide clarification by presenting current scientific evidence addressing the most frequently asked questions.

*Prof. Guglielmo Campus
University of Göteborg, Sweden
Sapienza University of Rome*

Fluoride helps to prevent and to manage caries.



TRUE

Fluoride plays a crucial role in both preventing and managing dental caries. It strengthens tooth enamel, making it more resistant to acid attacks from plaque bacteria and sugars in the mouth. Additionally, fluoride can help reverse early signs of dental caries by promoting remineralization.

All people who use fluoridated products will develop fluorosis.



FALSE

All people who use fluoridated products will develop fluorosis. Dental fluorosis typically occurs only when excessive fluoride is ingested during the early years of tooth development, usually up to age 8. When used appropriately—such as in toothpaste, mouth rinses, or professionally applied treatments—fluoride is safe and effective for preventing caries without causing fluorosis.

Fluoride is a naturally occurring mineral found in water, air, and some foods.



TRUE

Fluoride is a naturally occurring mineral found in water, air, soil, and various foods. Its presence in the environment is due to natural geological processes. Public health programs often adjust fluoride levels in drinking water to optimize its protective effect against dental caries, using forms of fluoride that are chemically identical to those found in nature.

Fluoride is dangerous because It's used to kill rats.



FALSE

This is a misleading claim. While some compounds containing fluoride—like sodium fluoroacetate—have been used as rodenticides, these are chemically very different from the fluoride used in dental products. The fluoride added to toothpaste is safe at recommended levels and has been extensively studied for its effectiveness in preventing dental caries. Toxicity depends on dose and chemical form, and the amounts used in oral health are well within safe limits.

There is scientific evidence that fluoride is the most effective tool to prevent caries.



TRUE

There is strong scientific evidence that fluoride is one of the most effective tools for preventing dental caries. Numerous studies and systematic reviews have shown that fluoride—especially in toothpaste—significantly reduces the incidence of cavities by strengthening enamel and promoting remineralization. Health organizations worldwide, including the WHO and ADA, endorse its use as a key component of oral health care.

The risk of autism is increased by fluoride use.



FALSE

Current scientific evidence does not support the claim that fluoride use increases the risk of autism. While a few studies have explored possible associations between fluoride exposure and neurodevelopmental outcomes, including autism, these studies often have significant limitations—such as small sample sizes, confounding variables, and lack of causal evidence. Major health organizations, including the American Dental Association (ADA) and the American Academy of Pediatrics (AAP), affirm that there is no credible scientific link between fluoride exposure at recommended levels and autism spectrum disorder (ASD).

The use of fluoride is recommended only for children.



FALSE

Fluoride is recommended for people of all ages—not just children. While it's especially important during childhood when teeth are developing, adults also benefit from fluoride through its ability to strengthen enamel, prevent caries, and support overall oral health. Fluoride toothpaste, mouth rinses, and professional treatments are effective tools for maintaining dental health throughout life.

The use of fluoride may cause cancer.



FALSE

The claim that fluoride causes cancer is not supported by credible scientific evidence. Multiple comprehensive reviews by health authorities—including the National Cancer Institute, the American Cancer Society, and the World Health Organization—have found no reliable link between fluoride at recommended levels and cancer risk. While a 1990 animal study raised questions about a rare bone cancer (osteosarcoma) in male rats, subsequent human studies have not confirmed this association. Fluoride remains a safe and effective tool for preventing dental caries when used appropriately.

Fluoride can reverse early signs of dental caries by remineralizing weakened enamel.



TRUE

Fluoride can reverse early signs of dental caries by promoting remineralization of weakened enamel. When applied topically—such as through toothpaste or mouth rinses—fluoride helps attract calcium and phosphate ions to the tooth surface, rebuilding the enamel and halting the progression of early carious lesions.

As caries disease is declining, fluoride toothpastes are not needed anymore.



FALSE

This is not accurate. While caries rates have declined in some populations; caries remains a significant public health issue globally. Fluoride toothpaste continues to be essential in maintaining oral health and preventing new caries from developing. The decline in caries is due to the widespread use of fluoride, so stopping its use could reverse that progress.

Fluoride makes your teeth less susceptible to being weakened by erosion.



TRUE

Fluoride helps make teeth more resistant to erosion. It strengthens the enamel by promoting remineralization and forming a more acid-resistant surface. This protective effect reduces the impact of acids from food, drinks, and bacterial activity, helping to preserve tooth structure.

Fluoride Is Unnatural.



FALSE

Fluoride is a naturally occurring mineral found in water, soil, plants, and even in the human body. While fluoride used in dental products and water fluoridation is often added in controlled amounts, it is chemically identical to naturally occurring fluoride. The idea that fluoride is 'unnatural' is misleading—many beneficial substances, including vitamins and minerals, are also added to products to support health.

Fluoride Will Lower Your IQ.



FALSE

Fluoride does not lower IQ when used appropriately. The claim that fluoride lowers intelligence is based on studies with significant limitations, often involving high levels of naturally occurring fluoride in drinking water—far above the levels used in regulated public health programs. Major health organizations, including the WHO and CDC, support the use of fluoride in dental care and water fluoridation as safe and effective for preventing dental caries.

The use of fluoride at concentrations recommended for oral hygiene is toxic as it interferes with the endocrine system.



FALSE

The use of fluoride at concentrations recommended for oral hygiene is not toxic nor is it an endocrine disruptor. The amounts of fluoride in toothpaste and other hygiene formulations are safe and the benefits to oral health are scientifically proven. Toxicity only occurs when excessively high doses are ingested, which does not happen with the correct use of the products.

Can the dentist and/or dental hygienist recommend the use of high-fluoride gels or varnishes as an additional preventive measure in at-risk patients?



TRUE

Dentists may recommend the use of high-fluoride gels or varnishes as an additional preventive measure for patients at risk, as these professional treatments increase the resistance of enamel against caries and can repair the early stages of dental damage.