

• **both statements are true**

Fluorides exert their anticaries effect by three different mechanisms:

1. The presence of fluoride ion greatly enhances the precipitation into tooth structure of **fluorapatite** from calcium and phosphate ions present in saliva. This insoluble precipitate replaces the soluble salts containing manganese and carbonate, which were lost due to bacterial-mediated demineralization. This exchange process results in the enamel becoming more acid resistant.
2. Incipient, noncavitated, carious lesions are **remineralized** by the same process.
3. **Antimicrobial activity** of fluoride:
  - In low concentrations inhibition of the enzymatic production of glucosyltransferase and intracellular polysaccharide formation
  - In high concentrations → during topical fluoride treatments → fluoride ion is directly toxic to some oral microorganisms

**Important:** Fluoride mouth rinses **have been shown** to have the greatest effect on **newly erupted teeth**, making it essential to have rinsing continued into the teen years to protect both the second and third permanent molars. It seems that fluoride rinses are most beneficial to smooth tooth surfaces, although there are some benefits to pits and fissures as well.



1. Fluorine, from which fluoride is derived, is the 13th most abundant element and is released into the environment naturally in both water and air.
2. Fluoride is naturally present in all water. Community water fluoridation is the addition of fluoride to adjust the natural fluoride concentration of a community's water supply to the level recommended for optimal dental health, approximately 1.0 ppm (*parts per million*). For warmer or colder climates, the amount can be adjusted from 0.7 to 1.2 ppm.