

Beyond Toothpaste: The Role of Intraoral Fluoride Devices in Oral Health Maintenance

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ABSTRACT:

Dental caries remains a significant concern, particularly among medically compromised individuals, those with mental disabilities, and the elderly. Fluoride has long been utilized as a preventive measure against dental caries through various modalities, including water fluoridation, systemic intake, and topical applications. Intraoral fluoride-releasing devices represent an innovative advancement in preventive dentistry, offering a targeted and sustained approach to reducing caries incidence. These devices provide controlled, long-term fluoride release directly into the oral cavity, ensuring optimal fluoride levels in saliva and dental plaque. This mechanism supports enamel remineralization, inhibits demineralization, and suppresses the activity of cariogenic bacteria. Diverse designs, such as fluoride-releasing elastomers, polymer-based systems, and bioadhesive materials, have demonstrated effectiveness in both clinical and experimental settings. This review examines the types and clinical applications of intraoral fluoride-releasing devices, emphasizing their role in caries prevention and potential directions for future research.

KEYWORDS: Dental caries, Fluoride, Intra oral fluoride-releasing devices.