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Minimal intervention in dentistry: A literature review on silver diamine fluoride as an innovative pulp capping material

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Today we know dental caries is not an infectious disease, so the aim of treating carious lesion focus toward less or non-invasive options to control caries activity (not to remove the lesion) and maintain pulp vitality. Pulp capping procedure with a reliable material is favorable. Applying Silver Diamine Fluoride (SDF) rather than removing carries is one of these novel materials.

This paper is aimed at reviewing the current literature on SDF as a pulp capping material. The review will provide a better understanding of SDF's properties, mechanism of action, the inflammatory response, cytotoxicity, pulp cells activity, dentinogenesis, SDF application considerations, silver penetration depth, and capping materials for Nano-silver fluoride and can aid in the decision-making process for maintaining the vitality of dental pulp in deep caries with minimal intervention.

Sources: A systematic search was performed in ProQuest, PubMed, SCOPUS, and Web of Science databases for articles published from inception to April 2022.

Conclusion: Silver diamine fluoride is a simple, non-invasive, nonsurgical, safe modern-day magic innovative dentin biomodified material and Use of Silver diamine fluoride is a key strategy in minimally invasive dentistry.

SDF has detrimental effects on the viability, ALP activity, and morphology of the pulpal like cells, so Direct SDF application causes pulp necrosis, the use of glutathione attenuated the toxic effects and develop a smart more biocompatible agent.

Indirect SDF application is generally biocompatible to dental pulp tissue with a mild inflammatory response, increased odontoblastic activity; enhance mineral deposition and tertiary dentine and apatite formation.

The amount and characteristics of residual dentin thickness is critical for safety and effectiveness of SDF.

- Knowing that Silver diamine fluoride is a magic solution that can prevent dentin demineralization and simultaneously arrest dental caries without the need to remove even soft caries, inhibit dentin matrix metalloproteinase and other unique properties, made Dentists offer this opportunity to their patients.
- Silver diamine fluoride is cheaper than other material and is affordable for dentists especially in general clinics or Low-income areas.
- By being aware of the properties of SDF, dentists can perform more effective and cheaper treatments for their patients, while preserving the maximum structure of teeth.

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Biography

Dr. Samani was born in 1983; she graduated from Isfahan University of medical science when she was 24 years old and then spends master degree in cosmetic and operative dentistry and graduated in this field when she was 29 years old. She started teaching in university since 10 years ago, and now she is Assistant Professor, Department of Operative Dentistry in Ahvaz Jundishapur University of Medical Sciences.

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