Effectiveness of nano-Hydroxyapatite (n-HA) in treatment of dentin hypersensitivity: A systematic review

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INTRODUCTION AND OBJECTIVES

Dentin hypersensitivity is a painful clinical condition which affects patients' life quality. The mechanism responsible for this ailment remains uncertain, although the hydrodynamic theory is the most commonly accepted. The majority of desensitizing agents in DH treatment consists in the obliteration of dentin tubules, thus controlling the flow movement. Nano-desensitizers were recently introduced, specifically nano-Hydroxyapatite, due to their biocompatibility properties and vast applications in dentistry, such as a bone substitute and remineralizing enamel. The nanometric proportions of n-HA allows an easier obliteration of dentin tubules.

This systematic review may answer the following question: Is nano-Hydroxyapatite effective in dentin hypersensitivity treatment?

METHODS

The database of this research on PubMed central and PubMed/medline was conducted according to the keywords: dentin hypersensitivity, dentin sensitivity, n-HA, nano-HA, nano-hydroxyapatite, combined with the connectors: "AND" and "OR" (dentin hypersensitivity OR dentin sensitivity) AND (n-HA OR nano-HA OR nano-hydroxyapatite).

The inclusion criteria comprised: studies from the last ten years (2007-2017), randomized clinical trials with four weeks control, adults and adults who hadn't undergone teeth bleaching.

RESULTS

From a universe of 208 studies, 5 were included in this systematic review. The first analysis comprised in the titles and abstracts of scientific articles, from which 186 were excluded, upon reading the full text, 14 articles were excluded and 5 were included, and there were no further matches through crossed references.

The five included studies were enclosed in a resumed table for easier and better result interpretation, and also the bias risk of each article.

CONCLUSIONS

In this systematic review, all the included studies have shown the effectiveness of nano-hydroxyapatite by reducing dentin hypersensitivity in a minimal period of four weeks. When compared with other desensitizing agents, nano-hydroxyapatite has shown an equal or even superior effectiveness, nevertheless, more studies are required to extrapolate more accurate conclusions.

CLINICAL APPLICATIONS

Nano-hydroxyapatite desensitizing agents are a valid new treatment option for dentin hypersensitivity and can be used in ambulatory (in the form of gel or toothpaste) or in the dental office.

BIBLIOGRAPHIC REFERENCES