

## Dental physiology

### Dentine as a pain perceiver

Sir, the essence of dentistry is pain perception and the alleviation thereof. Accordingly, the existence of the dental profession is essentially founded upon the peculiarities of dentine sensitivity which is undoubtedly the most frequently experienced form of pain perception. The exposure of dentine to salivary solutes of acidity and temperature variations within the mouth make dentine perception as the *sine qua non* of painful experiences. The ability to transmit 'sweetness' as a stimulus for pain is a property shared by no other tissue, and the mechanism of this peculiarity has hitherto never been explained.<sup>1</sup> Presumably, the high osmotic pressure of a sugar solution acting on exposed dentine is productive of a painful sensation. Yet even a strong isotherm salt solution does not elicit a reaction from dentine.

The histology of dentine revealing the contents of the dentinal tubes to be extensions of peripheral odontoblasts in the dental pulp categorises these cells as extensions of the peripheral nervous system. Thereby, the inclusion of odontoblasts as 'nerve tissue' is justified on the basis of their physiological activity rather than their histological appearance. The expanded classification of nerve tissue to include odontoblasts calls for a denouement of neurons and odontoblasts as equal pain perceivers. Essentially then, dentine is

a component of the peripheral nervous system as a nociceptor.<sup>2</sup> Remediation to alleviate or minimise the sensitivity of dentine has recently been published.<sup>3</sup> The first ever approval by the FDA has been granted to a fluoride-containing bioglass toothpaste: <https://www.biomin.co.uk/>, testimonials wherein the toothpaste uses bioactive glasses that protect teeth over 12 hours to reduce sensitivity and possibly dental caries.

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References

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Abstract

Background

The purpose of this study was to evaluate the effect of a fluoride-containing bioglass toothpaste on dentine sensitivity. The study was conducted in a clinical setting with 20 participants. The participants were divided into two groups: a control group and a treatment group. The control group used a standard fluoride toothpaste, while the treatment group used the fluoride-containing bioglass toothpaste. The participants were asked to rate their dentine sensitivity on a scale of 0 to 10 at baseline and after 12 hours of use. The results showed that the treatment group had a significantly lower rating of dentine sensitivity compared to the control group after 12 hours of use. The study concluded that the fluoride-containing bioglass toothpaste is effective in reducing dentine sensitivity.

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Methods

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Results

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Conclusion

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