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A novel visual test for hydrogen sulfide on the tongue dorsum

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ABSTRACT

Objective: The purpose of this study was to develop a novel colorimetric system for direct detection of hydrogen sulfide on the tongue dorsum from subjects with complaints of halitosis. Method: An assay system comprised of a cotton swab impregnated with zinc sulfate, attached chromatography paper, stabilizing solution, and coloring reagents for the methylene blue technique was developed. Using this system we investigated on the visualization of the hydrogen sulfide on the solid phase and possibility for evaluating the origin of oral malodor on the tongue dorsum. Results: The assay system made possible visualization of a linear curve ranging from 5.3 ng to 85 ng of hydrogen sulfide, with low reagent consumption and miniaturization. However, the sensitivity was different for gaseous and fluid samples. The biofilm of the tongue dorsum from subjects with complaints of halitosis showed different shades of methylene blue depending on the concentration of hydrogen sulfide. A positive correlation was found between hydrogen sulfide on the tongue dorsum and the concentration of VSC hydrogen sulfide in mouth breath as measured using an Oral Chroma semiconductor gas sensor. Conclusion: The results of this study suggest that the novel assay system can be used as a visual warning sensor for halitosis by measuring hydrogen sulfide on the tongue dorsum.

KEYWORDS

Halitosis; Tongue dorsum; VSC Hydrogen Sulfide; Methylene Blue

Cite this paper

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