

# ***In vitro* and *in vivo* effects of a composition containing lactoperoxidase on oral bacteria and breath odor**

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**Abstract.** The antimicrobial activity of a composition containing bovine lactoperoxidase (LPO), glucose oxidase, glucose and buffer salts was tested against oral bacteria *in vitro*. A preliminary *in vivo* study was conducted to test the effect on breath odor of the tablets containing this composition. Suspension of the composition in filter-sterilized saliva or phosphate-buffered saline containing sodium thiocyanate (NaSCN) at a physiological concentration showed bactericidal activity against *Aggregatibacter actinomycetemcomitans* and *Porphyromonas gingivalis*. Although hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) was not detected in the suspension, hypothiocyanite (OSCN<sup>-</sup>) was detected at an average concentration of 0.161 mM. Three tablets made with the composition were continuously sucked by three subjects, and the levels of volatile sulfur compounds (VSCs) in their oral air samples were monitored over a 2 h period by compact gas chromatography. Ingestion of the tablets reduced the average levels of VSCs in the oral air, whereas non-treatment or ingestion of the control tablets without enzymes did not. These results suggest that the composition shows bactericidal activity through the formation of OSCN<sup>-</sup> in saliva and is effective for reducing breath odor, although further clinical studies are needed.