



PHYTOSPHINGOSINE IN DENTAL CARE

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Phytosphingosine is a phospholipid - a type of lipid that is majorly present in all biological membranes. The antibacterial effect of phytosphingosine was reported earlier; it inhibits micro-organisms and their second messenger functions. Therefore, phytosphingosine lipids are considered as one of the body's natural defense systems. Previous studies and data show that phytosphingosine has been used in skin care, for treatment of acne, based on both anti-inflammatory and anti-microbial activities.¹ Phytosphingosine is also used in moisturizers and anti-aging treatments due to its property to replenish natural barrier function of skin. The main function of phytosphingosine is to control the regulation and production of lipids on the external skin layer and to maintain healthy skin conditions. It is used in a wide range of cosmetic products like face wash, moisturizer, cleansing wipes, hair conditioning agents and facial scrubs.

R&D activity has been observed by companies and universities in the application of phytosphingosine in toothpaste, mouth washes/rinses. Research is currently going on the use of phytosphingosine in dental problems and application of phytosphingosine aggregate on oral mucosa.

The key companies performing R&D activities in this area are AJINOMOTO, COSMOFERM and SEMBIOSYS.



In a recent study, the effect of phytosphingosine on bacterial biofilm has been evaluated. Results from this study shows that phytosphingosine has strong anti-adherence and anti-biofilm property and it could be used for oral microbial control i.e. either prevention or for therapeutic purposes in oral care products, such as toothpaste and mouth rinses.²

Another study shows the antibacterial effect of oral rinse containing phytosphingosine. Oral rinse comprising natural antibacterial agent was manufactured and evaluated for its effect in periodontal diseases. A comparative antibacterial activity and cytotoxicity of oral rinses were performed with other groups. The results from this study showed that antibacterial activities of oral rinses comprising phytosphingosine were 99.6% and revealed strongest contact inhibition of Streptococcus mutants among other tested groups.³

1 <https://www.ncbi.nlm.nih.gov/pubmed/18489348>

2 <https://www.ncbi.nlm.nih.gov/pubmed/29232659>

3 <https://www.scientific.net/KEM.342-343.941>

Anti-erosive effect of phytosphingosine has been evaluated and compared with fluoride containing compounds and it is observed that there is a significant reduction in tissue loss compared to negative control. However, toothpastes containing fluoride ion were significantly more effective as compared to phytosphingosine.⁴

It is observed from research studies that phytosphingosine has good antibacterial and anti-erosive effect. Further, it could be beneficial for oral hygiene and reduction of oral bacteria.

Till now no product for oral care like toothpaste, mouthwashes containing phytosphingosine are available in the market. As consumers are now a days more inclined in the direction of using natural and bio-based products and also have awareness about the possible side effects of chemical ingredients, a surge in the demand of phytosphingosine based oral product market seems much possible. Conclusively, there is a wide scope in developing solutions for dental or oral problems using phytosphingosine in toothpaste, mouth washes, dental creams etc.

⁴ <https://www.deepdyve.com/lp/wiley/anti-erosive-effects-of-fluoride-and-phytosphingosine-an-in-vitro-xY8NqFg8C3>

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