

Technology Opportunity, Ref. No. UA-18/009

Commensal bacteria composition for the treatment of dry mouth

Keywords Xerostomia, dry mouth, biofilm, EPS, extracellular polymeric substance, moisturization, lubrication, oral cavity, menopause, chemotherapy, saliva

Inventors T. Waltimo, O. Braissant, P. Kardas, M. Astasov-Frauenhoffer

Reference Scientific publication in preparation

Background Xerostomia, including dry mouth, is a widespread and serious health problem of approximately 20% of the adult population of industrialized countries. Dry mouth makes it difficult to speak, chew, and swallow, and alters the taste of food. In a long term, it can also cause a sore throat, hoarseness, and bad breath. Around the world there are in total more than 135 million people suffering from dry mouth. However, the prevalence constantly increases due to demographic changes in the population. There are a number of commercially available saliva substitutes that aim to imitate the complex chemical composition and functions of saliva. The common problem of all available products is their very short-term relief of the subjective discomfort, resulting in suboptimal compliance.

Invention The invention provides an approach to gain a long-lasting relief for mouth dryness by providing novel harmless oral commensal microorganisms that produce extracellular polymeric substances (EPS). These microbial strains maintain oral moisture and lubrication by providing EPS that are hygroscopic and can retain humidity. The five bacterial strains were selected very low calcium affinity and at the same time no or very low calcium dissolution in order to avoid damage to the teeth.

Bacterial strain	Ca ²⁺ affinity [M ⁻¹]	Ca ²⁺ dissolution [mm]
1	1.1 x 10 ⁴	0.0 ± 0.0
2	1.5 x 10 ⁴	0.0 ± 0.0
3	1.0 x 10 ⁴	0.0 ± 0.0
4	0.3 x 10 ⁴	3.3 ± 0.0
5	0.5 x 10 ⁴	0.0 ± 0.0
Reference commensal	2.1 x 10 ⁴	20.8 ± 3.8

Fields of Use Treatment of dry mouth

Patent Status Patent application filed

Contact Unitectra, Technology Transfer University Basel, Dr. Peter Eckard, Steinengraben 5, CH-4001 Basel, +41 61 207 30 14, mail@unitectra.ch