Development of new oral care products to reduce the negative impact of antiseptics and endocrine disrupters on man and environment

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Abstract

A large range of oral care products containing antiseptics are effective in fighting dental plaque, dental caries and gingivitis. However, after dispersal in the environment, chemicals such as triclosan and quaternary ammonium compounds have been found in groundwater, drinking water and rivers. They can induce antibiotic resistance and have been shown to accumulate in human milk, urine and serum. While triclosan itself is already a weak endocrine disruptor, its by-products are more toxic to the environment. Persistent antiseptics have been identified in plants and animals, and aquatic species are far more sensitive to triclosan than mammals. Triclosan has been banned by the FDA in antibacterial soaps and regulation in Europe has also restricted its use. So, dental ethics requires some alternative formulations in toothpastes and mouthwashes that are good for humans, oral microbial balance and the environment. We assayed a Solidago virgaurea extract, which contains solidago saponins (bucovia™). These plant detergents are not bactericidal or fungicidal stricto sensu, but they inhibit Candida albicans yeast-hyphal transition. A randomized, double-blind trial with a Solidago toothpaste vs. control (twice daily for 4 weeks) confirmed that inhibition of hyphal formation was a safe and original approach for reducing oral biomass, because hyphal inhibition prevents the development of co-aggregating bacteria. Patients had a lower microbial load, including both fungal (C. albicans) and total bacterial count ($p<0.01$). The reduced biomass of anaerobic bacteria provided a longer clean feeling in the mouth (average additional period 76 min). Solidago extracts are innocuous to humans and biodegradable in the environment.

Biography:

Isabelle Precheur has received her DDS and PhD from the University of Cote d'Azur School of Dentistry in Nice, France. As a professor, she has created an academic research laboratory in the field of oral microbiology at the School of Dentistry and a Dental Ward dedicated to oral medicine in Nice University Hospital. She has published more than 45 papers in reputed journals, contributed to 10 clinical trials and has coached 25 DDS students and 6 PhD students.