Biofilm, bugs and the microbiome: Implications for future research and practice

Research now links the microbial diversity of the microbiome to several systemic diseases. Diversity refers to the variety of organisms inhabiting the microbiome. Low microbial diversity in the gut has been linked to irritable bowel syndrome and obesity. High diversity in the vagina has been linked to vaginosis. The mouth also shows the high diversity of microbes. What are its implications for research and everyday dental practice? Research shows the within-subject variation in the microbiomes of the mouth, the gut, the vagina, and the skin are less than the variation between subjects. This suggests universal antimicrobial treatments of these sites will be extremely challenging, including the use of dentifrice, oral rinses and oral sprays to the mouth. This presentation offers new criteria for the selection and use of oral care products. What happens between dental visits is as critical as what happens during the dental visit. Dental hygienist and dentists work to remove dental plaque, tartar, and calculus from the teeth during scaling and root planning (SRP). Yet, biofilms, such as dental plaque, regrow rapidly and there is no natural process of removal. The microbes inhabiting the biofilms are acid-genic; they produce acids that etch and erode tooth enamel. The produce volatile sulphur compounds that are the precursors of both system and gum disease. And they provide the insult to tissue that leads to inflammation. Our emerging understanding of the nature of oral biofilms and the oral pathogens that inhabit them have broad implications of clinical practice, oral hygiene instruction, and home oral care. Our remarks consider how current understanding of the oral microbiome, pathogenesis, and oral biofilms may shape future research and practice.

Biography

James L Ratcliff is Chairman of the Board and CEO of Rowpar Pharmaceuticals, Inc., Scottsdale, AZ, maker of the ClōSYS brands of oral care products. In 2017 and 2018, Rowpar was cited by Corporate Livewire as an innovative leader in oral care for North America. In 2014, Rowpar received the US Small Business Administration’s Exporter of the Year Award. From 1989 to 2000, he served as a senior research scientist, professor, and director, Center for the Study of Higher Education at the Pennsylvania State University. From 1979 to 1989, he was a professor and program head for higher education at Iowa State University. He is the author of 120 articles, books, book chapters, is co-inventor on over 24 patents and patents pending. He is an active member of the Arizona Biotechnology Assn., American Academy of Oral and Systemic Health, American Education Research Assn., and the International Association for Dental Research. He holds a PhD in Higher Education from Washington State University, an MA in History from Washington State University, and a BA from Utah State University.

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