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Mission Statement: The mission of Advanced Saliva Science Reviews is dedicated to presenting a monthly synopsis of scientific reviews within the arena of saliva testing with the intention of providing evidenced based perspectives and protocols.

Review #1: A Brief History of Saliva Testing: A Medical Grade Diagnosis vs. A Classification System

Saliva testing for the causative agents of oral diseases has become the “Gold Standard” for personalizing specific organisms that cause salivary dysbiosis and local diseases. Plus, this scenario creates chronic systemic immune dysfunction which in turn creates chronic systemic inflammation.

In 1889, Dr. Willoughby D. Miller, MD, DDS, published the first important medical text titled “The Microorganisms Of The Human Mouth: The local And General Diseases Which Are Caused By Them”.

In the preface, Dr. Miller stated ... *“It has been established beyond all questions that myriads of microorganisms are constantly present in the human mouth, and that these, under favorable circumstances, are capable of manifesting an action of the utmost significance upon the local as well as the general health of the patient. **Not alone are they responsible for the vast majority of those diseases of the teeth and contiguous parts which the dental surgeon is called upon to treat, but they also give rise to other local and general disorders of the most serious nature”.***¹

Even further in his introduction, he stated that ... *in my opinion, it is utterly impossible for anyone to obtain a proper understanding of the action of microorganisms in the mouth **without a knowledge of at least the elementary principles lying at the foundation of the science of bacteriology.***

Thus, the early attempt to find and use a medical grade diagnosis was born in the laboratory of Dr. Robert Koch where Dr. Miller also was employed. The work of Dr. Koch and the “Koch’s postulates” had much to do with Dr. Miller’s research.

However, in 1936, the periodontal probe was invented. And this became a surrogate tool that was easier to use, less education required, and became the modern “classification system” that is still used by some today to “Classify” disease damage: not to diagnose.

Modern technology, such as DNA-PCR, has provided each clinician the ability to use saliva as an analyte to discover causation, thus a true diagnosis. Thus, it is both illogical and unscientific to think that a periodontal probe remains an important tool in this arena. The probe is the reason that periodontal infections are detected late, that “Once a periodontal patient, always a periodontal patient” is the norm, and that SRP is still regarded as the only treatment that is required by the AAP and the ADA.

The 1980’s and the 1990’s were two decades that introduced an early understanding of the specific members of the oral microbiome. During that time, over 300 species had been identified. *Today*, we have identified over 1000 species. Findings included bacteria, viruses, archaea, and fungi. While continuing research is important, today the evidence for dysbiosis and immune dysfunction within the oral cavity is caused by specific oral bacterial pathogens.^{2,3,4}

Important trials were published between 1989, 1994, and 2006^{5,6,7} that advocated the need to test each patient for the correct targets of dysfunctional immune reaction.

Today, with many different saliva tests available it becomes troublesome that some tests either test for too many targets or too few targets of therapy. Plus, the voices that are looking for a chairside test for proteins and inflammatory markers also miss the mark relative to a clinical decision-making process.

Targets that include viruses, fungi, matrix metalloproteinases, and inflammatory markers are not considered accurate targets of therapy in today's modern medicine. While we have known that these are present, these as targets merely increase the cost of the lab test for the labs that provide these tests. Plus, tests that use only the literature from the 90's also miss the mark and increase the burden of cost for the office and the patient.

The most Significant scientific discovery in medicine in the 20th century includes oral medicine.

This discovery by Dr. Kary Mullis, PhD, in 1993 introduced the ability to determine causative agents of infectious diseases using DNA-PCR as well as deciphering the human genome. This technology was used to decipher the human genome as well as all other living organisms. It was introduced to medicine quickly. Dr. Mullis won the Noble prize in 1993 due to his work.

And the first PCR testing lab for periodontal infections was created by Dr. Pete Camp, PhD in the Netherlands in 1999. He worked with a lab in Germany to offer this technology to oral health professionals in Europe and beyond. Having learned about his work, we flew to Germany to meet Dr. Camp and to understand his test and the use of DNA-PCR for our patients.

Note: This author incorporated this early form of DNA-PCR in his practice in 2001 to develop case studies to discover the advantages of saliva testing before and after personalized treatment. After recording the significant improvement in patient outcomes by using DNA and recording case examples, in 2003, Advanced Dental Diagnostics as founded by this author and his son to introduce DNA-PCR testing to the clinicians within the U.S. (As we were using a laboratory in Germany, we found it important to create a U.S. based clinical laboratory in 2007: thus the beginning of saliva testing for oral diseases in the U.S.)

Today, what does the current literature support as the most important targets of therapy?

Next month we will address this most important topic from an evidence-based perspective.

Thank you.

Tom