Diagnosis of periodontal infections through anaerobic microbiological culture

Description

Microbiological culture techniques for isolation and identification of pathogenic bacteria related to periodontal-origin infections. This conventional microbiology-based technique is considered the gold standard for detecting bacterial pathogens that reside in the subgingival biofilm.

How does it work?

Microbiological samples are collected from the locations to evaluate using sterile paper points. These are transferred to a vial with reduced transport fluid, preserving the anaerobiosis of samples. After transporting period up to 24 hours, the samples are dispersed, diluted and inoculated into different selective media, according to the origin of the sample. The plates are incubated in the appropriate atmosphere and temperature for the precise time. Subsequently, they are isolated and identified mainly by microscopic and biochemical techniques

What problem does it solve?

Through microbiological culture, multiple bacterial species can be detected simultaneously, including unexpected bacteria, as well as the ability to determine antimicrobial susceptibilities. This allows for the identification of unusual pathogens in the subgingival flora, as well as providing critical information to establish the periodontal treatment plan.

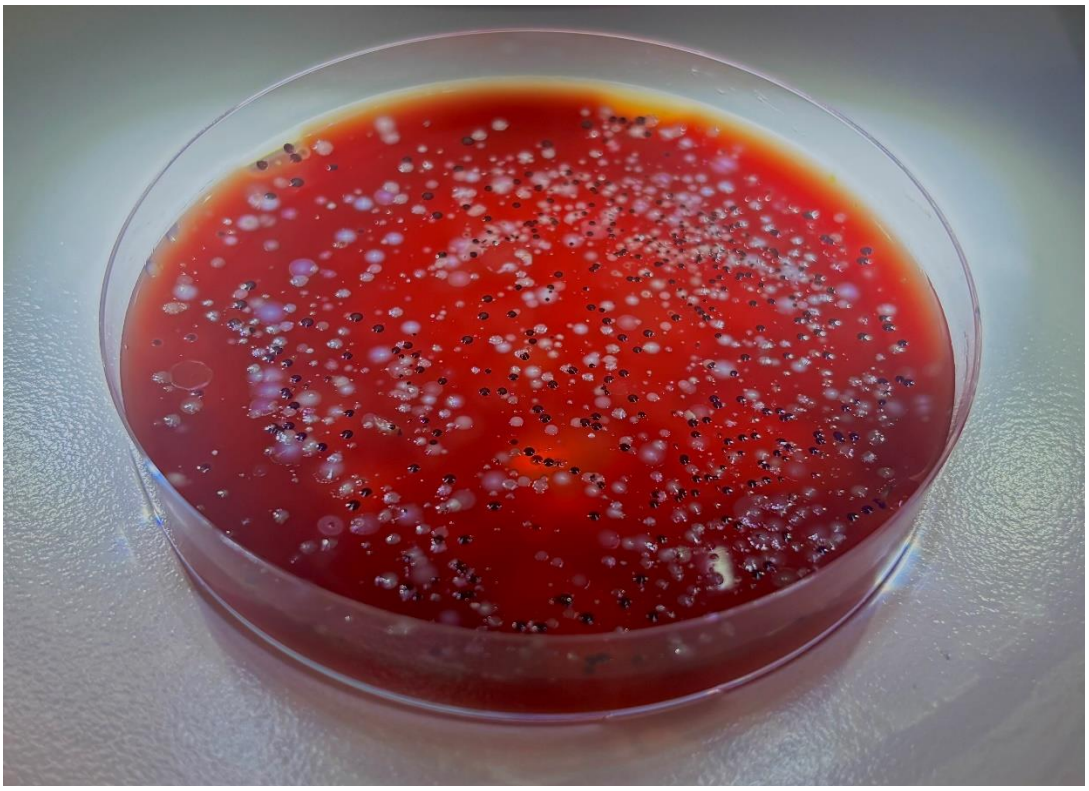

Figure 1: *Culture of subgingival plaque in which the great diversity of this microbial microflora is shown.*

Medicine Faculty. Entrepabellones building 7 y 8.
C/ Doctor Severo Ochoa, 7. 28040 Madrid.
comercia@ucm.es

What future products will it develop?

A large portion of oral microorganisms are cultivable, making the use of conventional culture techniques essential for establishing a microbiological profile. This profile allows dentists to make not only clinical but also microbiological diagnoses, helping to identify sites with active disease and predict the disease's progression. It provides clear assistance in the diagnosis and treatment of certain periodontitis cases.

Competitive advantages compared to other research.

Despite the advancement of other techniques, culture method remains the gold standard for microbiological diagnosis. In addition to determining the presence of different bacterial species and evaluating their susceptibilities to various antibiotics, this technique also allows for the estimation of the total number of isolated bacteria.

Where has it been developed?

This technique has been developed in the Laboratory of Periodontal Research, Department of Stomatology III at the Faculty of Dentistry. The research laboratory uses culture techniques as a support for research and as an aid in diagnosis. In the field of the research, there are numerous studies published in national and international journals with high impact factor, including studies with others International Dental Faculties.

In the clinical field, it represents a very useful tool for the diagnosis and treatment of patients attending the Master of Periodontology of the same Faculty.

And moreover…

The technology exposed provides assistance in research and to clinicians in two ways:

- **Add the microbiological analysis** to research protocols and use microbiological variables in research projects in dentistry
- **Assist in the diagnosis** and treatment of their patients to clinicians, by providing advice based on microbiological analysis of samples.

Researcher in charge

Mariano Sanz Alonso, marianosanz@odon.ucm.es
Departament: **Estomatology III**
Faculty: **Odontology**