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ORAL AND GUT MICROBIOME IN PATIENTS WITH PERIODONTITIS, DESIGN AND PRELIMINARY RESULTS OF THE FIRST NATIONAL STUDY (URUGUAY)

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Periodontitis is a chronic immunoinflammatory disease, which results from the deregulation of homeostasis of the oral microbiota and host defense mechanisms that cause damage to the tissues surrounding the tooth. In addition to its impact on oral health and quality of life, periodontitis has a significant impact on other organs and constitutes a relevant comorbidity for other chronic diseases. Non-surgical periodontal treatment (NSPT) involves the control of supra- and subgingival bacterial biofilm, and has been shown to affect both oral and intestinal microbiota. PerioBIOMA.uy is a descriptive cohort study that aims to determine, how oral and gut microbial populations change as a result of NSPT and to associate the composition and dynamics of these microbiomes with the dietary, nutritional, sociodemographic, and pathophysiological factors of the individuals. We aim to recruit at least 50 adult patients at the Periodontics Clinic of the School of Dentistry following certain inclusion and exclusion criteria. The project consists of three types of observational data: a) severity of periodontitis and paraclinical data, determined by experienced dentists in epidemiological surveys, supported by X-ray images and laboratory analyses, b) biometric, sociological, and dietary data, and c) structure, function, and diversity of the oral and gut microbiomes, obtained through high-resolution massive sequencing. The design of the interviews is based on the results of epidemiological studies of periodontitis in Uruguay, as well as on validated specific questionnaires for measuring physical activity levels or quantifying intake in the study population. All interviews are conducted by a nutritionist and completed using online forms. Saliva and stool samples are collected in tubes specifically designed for these purposes, before and after treatment. DNA extraction is performed using commercial kits, and genomic libraries are prepared for high-resolution massive sequencing. So far we have gathered information from around 30 patients, with some of them completing the whole workflow, and we managed to extract sufficient quantity and quality of DNA from saliva and fecal samples using commercial kits. Although the main idea of this project is not new in the field of study of human microbiomes, it is the first in the Uruguayan population. We are looking for species that can serve as prognostic or diagnostic biomarkers for periodontal disease, or even discover species with therapeutic potential (for

example, probiotics), we also aim to contribute to the development of an algorithm to improve the diagnosis and management of periodontitis based on a limited number of oral bacterial species combined with metadata. Finally, we consider it important to highlight that the project represents an unprecedented collaboration between researchers in the clinical and basic sciences areas. This work presents the methodology and preliminary results obtained with the first cohort.

Palabras clave: periodontitis - microbiome - nutrition - lifestyle - probiotics