BACTERIA FROM RATS USED FOR THE CHEMOTHERAPY-INDUCED MUCOSITIS MODEL ARE STIMULATED BY RIBOFLAVIN.

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Introduction and objectives: Chemotherapy-induced mucositis is a severe side-effect of anti-cancer treatment and is associated with symptoms, such as pain, bacteremia and malnutrition. Ultimately, mucositis leads to breaks or changes in chemotherapy treatment affecting the survival of the patients. It was previously shown that this treatment lead to an inflammatory disorder that induces changes in the composition of the gut microbiota, including a decrease in the abundance of anaerobic bacteria. This dysbiosis consequently aggravates inflammation in the gut, which has negative consequences to patients. However, over the last decades compounds such as vitamins and amino acids were shown to have a beneficial role in several inflammatory disorders. Riboflavin was recently shown to have a beneficial role in mucositis due to its ability to suppress inflammatory pathways and to induce proliferation of epithelial cells. Moreover, the strict anaerobe *Faecalibacterium prausnitzii* and the fermentative bacterium *Enterococcus faecalis* can survive under low oxygenic conditions by using riboflavin as an electron transfer mediator (ETM). In this study, we aim at investigating the effect riboflavin on the growth of anaerobic bacteria that we isolated from our rat model.

Materials and methods: To investigate the effect of riboflavin on the growth of six bacterial isolates from methotrexate-induced mucositis rats, their growth medium was enforced with different concentrations of riboflavin and the optimal density measured at different time points for 48 hours. Through microbial fuel cell (MFC) technique, the ability of bacteria to reduce the environment was measured by the current produced with riboflavin as ETM.

Results and discussion: Our results show that, when stimulated with different concentrations of riboflavin, the anaerobic bacteria such as *Blautia coccoides, Roseburia intestinalis* and *Bifidobacterium longum* significantly grow better compared to controls, even in the presence of oxygen. Moreover, results from the MFC also show that *Blautia coccoides* and *Enterococcus faecalis* are able to use riboflavin as an ETM, which suggests that riboflavin can be used by specific strict anaerobic bacteria to grow under oxidative conditions. Our finding strongly indicate that riboflavin can be used as a potential therapy to maintain the balance between aerobic and anaerobic bacteria in the gut during mucositis.

Theme: Novel developments