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MODULATION OF GUT MICROBIOTA BY ANTIBIOTICS DID NOT AFFECT ANHEDONIA IN A HIGH-FAT DIET-INDUCED MODEL OF DEPRESSION IN MALE MICE.

POSTER SESSION 03 - SECTION: GUT-BRAIN AXIS AND THE MODULATION OF APPETITE

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Long-term consumption of a high-fat diet (HFD) causes obesity and is a risk factor for depression. HFD has a significant impact on the gut microbiota, and dysbiosis of the microbiota is now associated with certain psychiatric disorders such as anxiety and depression. We aimed to investigate whether modulation by antibiotic treatment of the composition of the gut microbiota in diet-induced obese (DIO) mice has an impact on depressive-like behavior. In this study, we analyzed the effects of a 15 weeks HFD consumption by male mice on their depressive-like behavior assessed in the forced swim and sucrose preference tests. Two weeks before beginning the behavioral tests, a group of DIO mice were given a combination of two non-absorbable antibiotics, neomycin and polymyxin B. HFD induced anhedonia, as revealed by the sucrose preference test, and significant changes in gut microbiota composition at the phyla and family levels. On the other hand, there was no significant effect of HFD on the peripheral and brain inflammatory profiles. In DIO mice treated with the antibiotics, an even more pronounced alteration in the composition of the gut microbiota occurred, without any change in anhedonia behavior. Only four families of bacteria were not affected in their abundance by the antibiotic treatment, the *Rikenellaceae*, *Streptococcaceae*, *Erysipelotrichaceae* and *Bifidobacteriaceae*. This stability concomitant with that of anhedonia may suggest that these families were involved in this depression-like behavior.