

## A POSSIBLE ROLE OF GUT MICROBIOTA IN THE BEHAVIORAL CONTROL OF ALCOHOL-DEPENDENT SUBJECTS

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**Background:** In a recent study, we have shown that clinical symptoms of alcohol dependence such as depression and alcohol-craving were related to increases in gut permeability and in inflammation. These observations suggest that the gut could influence behavior. However, the nature of the intestinal processes involved in the change in gut permeability and in inflammation and their relation to psychological symptoms is still unknown.

**Subjects and methods:** We compared 13 non-cirrhotic alcohol-dependent (AD) subjects hospitalized for a detoxification program with 15 healthy controls matched for age, sex and BMI. Gut permeability was measured using <sup>51</sup>Cr-EDTA. Fecal samples were collected to analyze the gut microbiota composition (using pyrosequencing and qPCR) and metabolomic analysis (GC/MS) was used to assess the gut microbiota function. The inflammatory pathways that were stimulated by gut-derived bacterial products were also analyzed in peripheral blood mononuclear cells (PBMC) at the mRNA level. We also used self-reported questionnaires to assess the psychological symptoms of these patients (depression (BDI), anxiety (STAI) and alcohol craving (OCDS)). The analyses were performed twice, at the first day of alcohol withdrawal and after 18 days of abstinence.

**Results:** Gut permeability was higher in AD subjects and was associated with specific alterations in the gut microbiota composition and function. The leaky gut allowed the translocation of gut-derived bacterial toxins such as lipopolysaccharides (LPS) and peptidoglycans (PGN) to the systemic circulation. Correlation analyses revealed that the gut permeability was strongly related to psychological symptoms of alcohol-dependence, at both times of withdrawal. The bacterial toxins simulated their Toll-like receptors in PBMCs and activated specific inflammatory pathways that were found to correlate with alcohol-craving. The alcohol withdrawal induced a decrease in gut permeability and in LPS-associated inflammatory pathways. However, 18 days of abstinence did not restore the gut microbiota composition, except in some specific species.

**Conclusion:** These observations suggest that alterations at the level of the gut microbiota influence the gut permeability and activate specific inflammation pathways that are related to psychological symptoms of alcohol-dependence. Altogether these observations are consistent with a role of inflammation as one mediator of a gut-brain communication in AD patients.

**Key words:** alcohol-dependence - gut microbiota – inflammation - intestinal permeability - alcohol-craving

## SENSORY PROCESSING IN YOUNG PATIENTS WITH AUTISM SPECTRUM DISORDERS (ASDs): A STUDY OF THE CORRELATION BETWEEN THE SENSORY PROFILE AND THE CLINICAL EVOLUTION OF THE ASDS

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**Background:** Sensory abnormalities have been reported since the first descriptions of ASDs. In the last years an increasing interest in these symptoms has arisen, around the question of their possible part in the physio- and psychopathology of autism as well as their potential use as early alerting signs. They have been recently added to the diagnostic criteria of the DSM-5. This on-going study investigates the relation between sensory processing anomalies and the social/communication symptoms in ASDs in a twofold design.