Assessment of tryptophan metabolism and signs of depression in individuals with carbohydrate malabsorption

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Statement of the Problem: It has been reported that fructose malabsorption (FMA) is associated with lower tryptophan (TRP) serum concentrations, which may play an essential role in the development of depressive disorders. However, study designs investigating the serum levels of TRP and TRP metabolites in large patient cohorts with carbohydrate malabsorption (CM) are still lacking. The aim of the present study was to investigate the association between primary adult lactose malabsorption (LMA), FMA, TRP metabolism and the signs of depression in a large cohort of adult patients presenting unspecific abdominal symptoms. **Methodology & Theoretical Orientation**: A total of 251 patients, who were referred for lactase gene C/T_{-13910} polymorphism genotyping and fructose hydrogen/methane breath testing, were included**.** All participants filled out the Beck Depression Inventory (BDI II). Serum concentrations of TRP, kynurenine (KYN), kynuric acid (KYNA), and TRP competing amino acids (CAAs: leucine, isoleucine, valine, phenylalanine, tyrosine) were measured by high-pressure liquid-chromatography. Logistic regression analysis was performed with LMA, FMA and all potential biomarkers of TRP metabolism to assess the effect on signs of depression, defined as a BDI II score > 13. **Findings**: Primary-adult LMA and FMA was detected in 65 (25.90%) and 65 (25.90%) patients, respectively. FMA was significantly associated with a BDI II score > 13 (Figure 1), whereas no such relationship was found for LMA. Serum levels of TRP and TRP metabolites were no predictors of depression. **Conclusion & Significance**: Taken together, in the logistic regression model calculated here, FMA was shown to be associated with a BDI II score > 13, however, further prospective longitudinal studies are needed to fully elucidate the relationship between CM, TRP metabolism and depressive disorders.

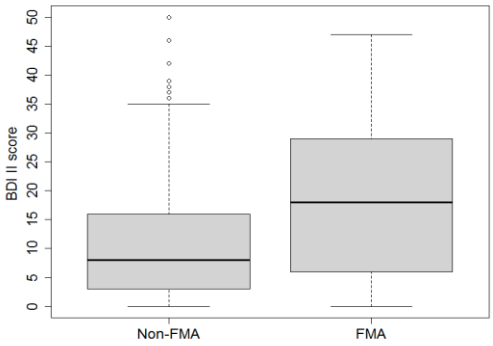


Figure 1. Box-and-whisker plot of BDI II score comparisons for 186 subjects without fructose malabsorption (Non-FMA) and 65 individuals with fructose malabsorption (FMA). The central boxes represent the 25th to 75th percentile range. The lines inside the boxes show the median value for each group ($p < 0.001$).

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