Metformin treated Wistar rats demonstrate remarkable alterations in lipid and bile acid plasma levels

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Background: Type 2 diabetes is one of the greatest threads of public health. The beneficial effects of the Metformin drug towards mitigating disease manifestation and reducing hyperglycemia have been connected to gut microbiota and inflammation onset.[1,2]

Materials and Methods: A total of 24 animals were treated either with metformin (12) or with control solution for 5 weeks. Treatment was preceded by a two week acclimatization period and followed by two weeks of recovery period. Plasma samples were collected every week. An untargeted UPLC-TOF-MS lipid profiling method was used for analyzing the plasma samples, while a semi-targeted UPLC-TOF-MS method was used for bile acid profiling.

Results and Discussion: Highly significant alterations were detected between the two groups for the concentrations of pro- and anti-inflammatory lipid precursors in plasma samples. Additionally, levels of sulfated and glucosylated bile acids in plasma were also altered. This was also the case with glucosylated bile acids when liver tissue was analyzed. In all occasions, levels of altered metabolites recur to control levels after the two week recovery period. This study may provide insights of the possible pathways able to function beneficially for diabetic patients, as well as blood markers reflecting modifications in gut microbiota.

References:

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2. Burcelin R. The antidiabetic gutsy role of metformin uncovered? *Gut.* May 2014;63(5):706-707.