Dominika Maciejewska et al., Metabolomics 2017, 7:2(Suppl)
http://dx.doi.org/10.4172/2153-0769-C1-037

Is the eicosanoids profile a helpful marker in the diagnosis of NAFLD progression?

Dominika Maciejewska[1], Piotr Ossowski[1] Arleta Drozd[1], Karina Ryterska[1], Dominika Jamioł-Milc[1], Marcin Banaszczak[1], Joanna Raszeja-Wyszomirska[2], Piotr Milkiewicz[2], Małgorzata Kaczorowska[1], Anna Sabinicz[1] and Ewa Stachowska[1]

[1]Pomeranian Medical University, Poland

[2]Medical University of Warsaw, Poland

Nonalcoholic fatty liver disease (NAFLD) is a spectrum of liver conditions related to fat infiltration in this organ. The disease affects 20-30% of adults in developed countries and become important clinical entity. NAFLD, similarly to metabolic syndrome is associated with: Dyslipidemia, cardiovascular disease, obesity, type II diabetes and insulin resistance. There is a great need to find a noninvasive method which will be helpful in NAFLD evaluation. The study compared biochemical parameters and eicosanoid profile between first and second stage of hepatic steatosis and the effect of 6 months dietary intervention on various parameters. A group of 24 patients diagnosed with stage I and II of NAFLD according to Hamaguchi score were enrolled. Eicosanoids profiles were extracted from the 0.5 ml of plasma by using solid-phase extraction RP-18 SPE columns (Agilent Technologies, UK). The HPLC separations were performed on an Agilent Technologies 1260 liquid chromatography. We analyzed the following eicosanoids: Profiles 5(S), 6(R)-Lipoxin A4, 5(S),6(R), 15(R)-Lipoxin A4, 5(S)-HETE, 5(S)-oxoETE, 12(S)-HETE, 15(S)-HETE, 16(R)/16(S)-HETE, 9(S)-HODE and 13(S)-HODE. Patients, with stage I of NAFLD showed significantly higher level of HDL cholesterol ($p<0.05$), lower level of 5-HETE ($p<0.05$) and 9-HODE ($p<0.05$). After a six-month dietary intervention, all patients reported complete reduction of hepatic steatosis, which resulted in a significant decrease of the concentrations of all eicosanoids and key of biochemical parameters (ALT, AST, GGTP, HDL, insulin HOMA-IR, $p<0.05$). At the early stages of fatty liver the biochemical parameters may not be significantly impaired. In this case, the diagnosis was based on the non-invasive method, such as ultrasound, became more difficult. 9-HODE can be produced during non-enzymatic oxidation of linoleic acid, or by 5-lipoxygenase (5-LOX) conversion. 5-HETE is converted from AA by 5-LOX. It seems that 5-LOX activity is higher in patients with II degree of NAFLD than in patient with I degree of the disease. Furthermore, eicosanoid profile changes appear faster than changes in biochemical parameters. Our result shows that eicosanoids profile can be useful in NAFLD evaluation.

Biography

Dominika Maciejewska is currently a PhD Scholar at the Pomeranian Medical University, Poland. Her field of interest is the molecular mechanism of NAFLD development. Her PhD topic is “Changes in the fatty acid profile of NAFLD patients before and after 6 month dietary intervention", which focuses mainly on seeking lipid marker in NAFLD progression.

dmaciejewska.pum@gmail.com

Notes: