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Short Communication

Lactobacillus fermentum ME-3 – a probiotic with potential for anti-atherogenic, anti-oxidative and anti-diabetic application

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Lactobacilli are normal inhabitants of human microbiota. Recent excellent review focused on huge practical potential of *Lactobacillus fermentum*, *Lf* ME-3 [1]. Especially valuable is information about the *Lf* strains that have in addition to common properties also the strain-specific beneficial effects on the host. A number of studies (*in vitro*, clinical randomized trials, clinical randomized double blind trials) have highlighted that human origin *Lactobacillus fermentum* ME-3 (DSM14241, LfME-3) has several specific properties including anti-atherogenic and anti-oxidative effects, possible anti-diabetic influence, ability to manage multiple protective systems like superoxide dismutase, glutathione system, etc [2-4]. For example, probiotic *Lf* ME-3 has two special enzymes needed for the redox cycle of glutathione (glutathione peroxidase and glutathione reductase) confirmed by the immunohistochemical method [5]. Beside that *Lf* ME-3 has glutamyl cystein ligase genes and glycine transporters (MiSeq, Illumina) both are needed to operate glutathione system and glutathione recycling. In addition, use of the *Lf* ME-3-fermented kefir for 14 days to 43 human subjects results in increase of the peak at m/z 308 (corresponding to glutathione) in the serum established by using MALDI-TOF mass spectrometer [6].

Recently we carried out the metabolomics study about effects of special *LfME-3* containing supplement (Reg'Activ cholesterol™ [7] with Absolute IDQ p180 Kit (BIOCRATES Life Science AG, Innsbruck, Austria) do to targeted metabolomics approach using an ultra-performance liquid chromatography (UPLC)/MS/MS system (Acquity UPLC [Waters] TQ-S triple quadrupole MS/MS [Waters]) We measured up to 180 endogenous metabolites from various classes including acylcarnitines, amino acids, biogenic amines, glycerophospholipids and sphingolipids. After 8 weeks of supplementation a remarkable number of metabolites expressed statistically significant changes. After implementation more stronger data analysis approach the changes of long-chain acylcarnites (C16, C18), phosphatidylcholines (PCaa C36:3; PCaa C38:3; PCaa C40:5; PCae C42:3), sphingomyelines (SM(OH) C22:1; SM(OH) C22:2; SM C24:0) and an OxS marker (a decli¬ne of Me-SO/Met) remain statistically significant (P = 0.02…0.00005). According to a number of literature data, all established metabolite shifts speak to favor of decline of OxS and inflammation level and antidiabetic influence.

Conflict of interests

Authors have no conflict of interest to declare.

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