

Description of Additional supplementary files

Supplementary data 1:

- 1a) Metabolic baseline characteristics of the subjects in the short-term intervention
- 1b) Habitual diet of the subjects in the short-term intervention, assessed with food frequency questionnaire (FFQ)
- 1c) Metabolic baseline characteristics of the subjects in the six-week intervention
- 1d) Habitual diet of the subjects in the six-week intervention, assessed with food frequency questionnaire (FFQ)

Supplementary data 2:

- 2a) Energy and nutrient intake of the participants in the oat group (OG) at baseline and at the end of the follow-up period assessed by 3-day dietary records
- 2b) Plasma (dihydro)ferulic acid levels before and after the short-term and the six-week intervention
- 2c) Fasting clinical markers before and after the short-term intervention
- 2d) Postprandial clinical markers before and after the short-term intervention
- 2e) Fasting clinical markers before, during and after the six-week intervention
- 2f) Postprandial clinical markers before and after the six-week intervention

Supplementary data 3:

- 3a) To examine the correlations between changes in metabolic data, targeted plasma metabolomic profile, global plasma and fecal metabolomic profiles, as well as gut microbiota composition following the short-term, high-dose oat diet
- 3b) To examine the correlations between changes in metabolic data, targeted plasma metabolomic profile, global plasma and fecal metabolomic profiles, as well as gut microbiota function following the short-term, high-dose oat diet
- 3c) To examine the correlations between changes in metabolic data, targeted plasma metabolomic profile, global plasma and fecal metabolomic profiles, as well as gut microbiota composition following the six-week, moderate oat diet
- 3d) To examine the correlations between changes in metabolic data, targeted plasma metabolomic profile, global plasma and fecal metabolomic profiles, as well as gut microbiota function following the six-week, moderate oat diet

Supplementary data 4:

4a) Correlations between the change in TC and LDL-C and the change in the targeted plasma metabolomic profile (FA, DHFA) within the short-term dietary intervention

4b) Correlations between the change in TC and LDL-C and the change in the global plasma metabolomic profile within the short-term dietary intervention

4c) Correlations between the change in TC and LDL-C and the change in the global fecal metabolomic profile within the short-term dietary intervention

4d) Correlations between the change in TC and LDL-C and the change in the microbial composition (genus level) within the short-term dietary intervention

4e) Correlations between the change in TC and LDL-C and the change in the microbial function (KEGG pathways) within the short-term dietary intervention

Supplementary data 5:

5a) To identify diet-induced changes in clinical markers that distinguish OG from CG during the short-term intervention

5b) To identify diet-induced changes in clinical markers that distinguish OG6w from CG6w during the six-week intervention

5c) To identify diet-induced changes in plasma metabolomic profile that distinguish OG from CG during the short-term intervention

5d) To identify diet-induced changes in plasma metabolomic profile that distinguish OG6w from CG6w during the six-week intervention

5e) To identify diet-induced changes in fecal metabolomic profile that distinguish OG from CG during the short-term intervention

5f) To identify diet-induced changes in fecal metabolomic profile that distinguish OG6w from CG6w during the six-week intervention

5g) To identify diet-induced changes in microbial composition that distinguish OG from CG during the short-term intervention

5h) To identify diet-induced changes in microbial composition that distinguish OG6w from CG6w during the six-week intervention

5i) To identify diet-induced changes in microbial pathways that distinguish OG from CG during the short-term intervention

5j) To identify diet-induced changes in microbial pathways that distinguish OG6w from CG6w during the six-week intervention

5k) To examine the correlations between changes induced by the short-term intervention in metabolic data, targeted plasma metabolomic profile, global plasma and fecal metabolomic profiles, as well as gut microbiota composition (model 1.1)

5l) To examine the correlations between changes induced by the short-term intervention in metabolic data, targeted plasma metabolomic profile, global plasma and fecal metabolomic profile,s as well as gut microbiota function (model 2.1)

5m) To examine the correlations between changes induced by the six-week intervention in metabolic data, targeted plasma metabolomic profile, global plasma and fecal metabolomic profiles, as well as gut microbiota composition (model 1.2)

5n) To examine the correlations between changes induced by the six-week intervention in metabolic data, targeted plasma metabolomic profile, global plasma and fecal metabolomic profile,s as well as gut microbiota function (model 2.2)

Supplementary data 6:

6a) Confirmation „Metabolon Compliance with Community Standards“

6b) Minimum Reporting Standards Document – Reporting the Use of Different QC Samples in Untargeted Studies (version 1)

6c) Metabolite Reporting Checklist