

Supplementary Materials

Chuanqin Hu, Xinyu Song, Zhenzhen Shao, Yingli Liu, Jing Wang* and Baoguo Sun

China-Canada Joint Lab of Food Nutrition and Health (Beijing), Beijing Advanced Innovation Center for Food Nutrition and Human Health, Beijing Engineering and Technology Research Center of Food Additives, Beijing Laboratory for Food Quality and Safety, Beijing Technology and Business University (BTBU), 11Fucheng Road, Beijing 100048, China

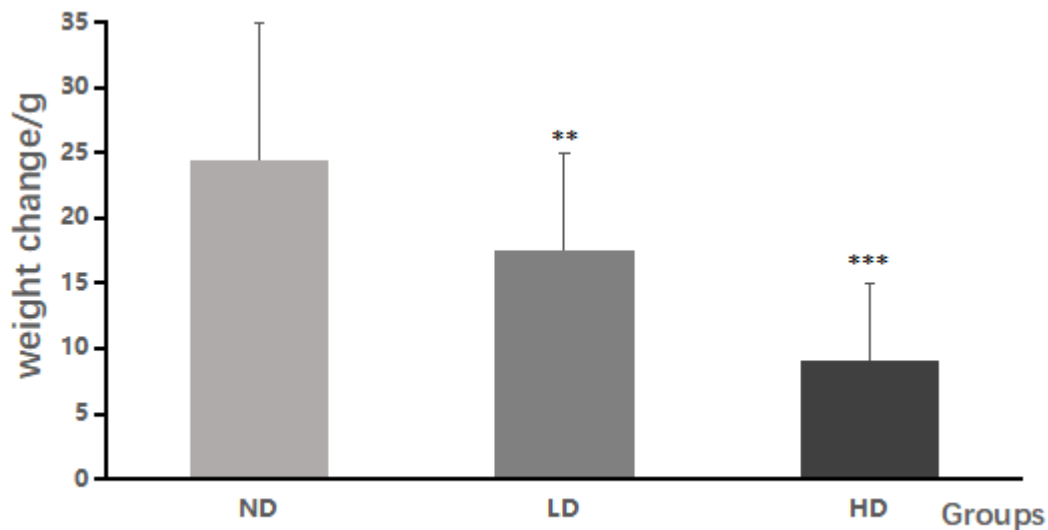


Figure S1. Changes in body weight of rats in ND, LD and HD groups

("**" represents $p < 0.01$, and "***" represents $p < 0.001$, ND group: Normal Diet group, $n=10$; LD group : Low-dose Diet group, $n=10$; HD group: High-dose Diet group, $n=10$)

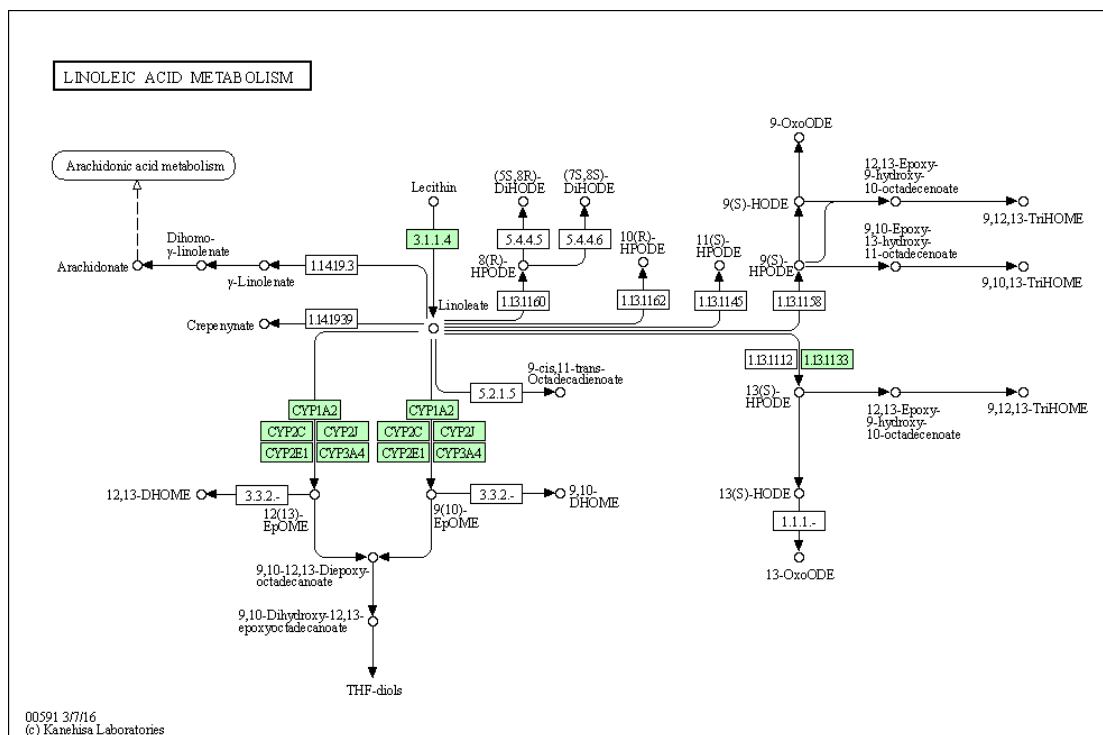


Figure S2. Linoleic acid metabolic pathway in rats among different groups.

Table S1. Areas under ROC curve (AUC) and the statistic significances.

Metabolite	AUC	Standard error	Sig.
Lactic acid	0.978	0.028	0
Propanoic acid	0.878	0.091	0.006
Alanine	0.878	0.085	0.006
Glycine	0.856	0.100	0.009
Valine	0.878	0.097	0.006
Urea	0.989	0.018	0
Leucine	0.889	0.095	0.004
Glycerol	0.900	0.087	0.003
Isoleucine	0.967	0.035	0.001
Serine	0.967	0.038	0.001
Propionate	0.900	0.070	0.003
Acetic acid	0.900	0.086	0.003
Proline	0.867	0.085	0.007
Pentanedioic acid	0.944	0.051	0.001
Creatinine	0.911	0.072	0.003
Phenylalanine	0.889	0.083	0.004
Acetamide	0.956	0.043	0.001
Phosphoric acid	0.889	0.095	0.004
Glutamine	0.956	0.048	0.001
D-Mannitol	0.833	0.109	0.014
Hexadecanoic acid	0.944	0.052	0.001
9,12-Octadecadienoic acid	0.978	0.028	0
Octadecanoic acid	0.989	0.018	0
Arachidonic acid	0.856	0.088	0.009
Oleic acid	0.989	0.018	0
Cholesterol	0.878	0.078	0.006

Table S2. Metabolic pathways list

Metabolic pathway ID	Metabolism	Metabolism ID	Metabolic pathway
A	Carbohydrate metabolism	1	Pyruvate metabolism
A	Carbohydrate metabolism	2	Glycolysis / Gluconeogenesis
A	Carbohydrate metabolism	3	Glyoxylate and dicarboxylate metabolism
A	Carbohydrate metabolism	4	Propanoate metabolism
A	Carbohydrate metabolism	5	Galactose metabolism
A	Carbohydrate metabolism	6	Pentose and glucuronate interconversions
A	Carbohydrate metabolism	7	Fructose and mannose metabolism
B	Lipid metabolism	8	Biosynthesis of unsaturated fatty acids
B	Lipid metabolism	9	Linoleic acid metabolism
B	Lipid metabolism	10	Primary bile acid biosynthesis
B	Lipid metabolism	11	Glycerolipid metabolism
B	Lipid metabolism	12	Arachidonic acid metabolism
B	Lipid metabolism	13	Fatty acid elongation
B	Lipid metabolism	14	Fatty acid degradation
B	Lipid metabolism	15	Steroid biosynthesis
B	Lipid metabolism	16	Fatty acid biosynthesis
B	Lipid metabolism	17	Steroid hormone biosynthesis
C	Amino acid metabolism	18	Valine, leucine and isoleucine biosynthesis
C	Amino acid metabolism	19	Valine, leucine and isoleucine degradation
C	Amino acid metabolism	20	Phenylalanine, tyrosine and tryptophan biosynthesis
C	Amino acid metabolism	21	Phenylalanine metabolism
C	Amino acid metabolism	22	Arginine biosynthesis
C	Amino acid metabolism	23	Alanine, aspartate and glutamate metabolism
C	Amino acid metabolism	24	Glycine, serine and threonine metabolism
C	Amino acid metabolism	25	Arginine and proline metabolism
D	Metabolism of other amino acids	26	Selenocompound metabolism
D	Metabolism of other amino acids	27	Glutathione metabolism
E	Metabolism of cofactors and vitamins	28	Pantothenate and CoA biosynthesis
E	Metabolism of cofactors and vitamins	29	Porphyrin and chlorophyll metabolism
F	Other metabolism	30	Aminoacyl-tRNA biosynthesis

Table S2. Continued

Metabolic pathway ID	Metabolism	Metabolism ID	Metabolic pathway
F	Other metabolism	31	Purine metabolism
F	Other metabolism	32	Pyrimidine metabolism
F	Other metabolism	33	D-Glutamine and D-glutamate metabolism
F	Other metabolism	34	Nitrogen metabolism