

Figure S1. Effects of quinoa protein on the blood lipid levels. (A)TC; (B)TG; (C)LDL-c; (D)HDL-c. \* $p < 0.05$ , \*\* $p < 0.01$  and \*\*\* $p < 0.001$  compared with HFD group. # $p < 0.05$ , ## $p < 0.01$ , ### $p < 0.001$  compared with Control group.

TG, Triglyceride; TC, total cholesterol; LDL-c, low-density lipoprotein cholesterol; HDL-c, high-density lipoprotein cholesterol.

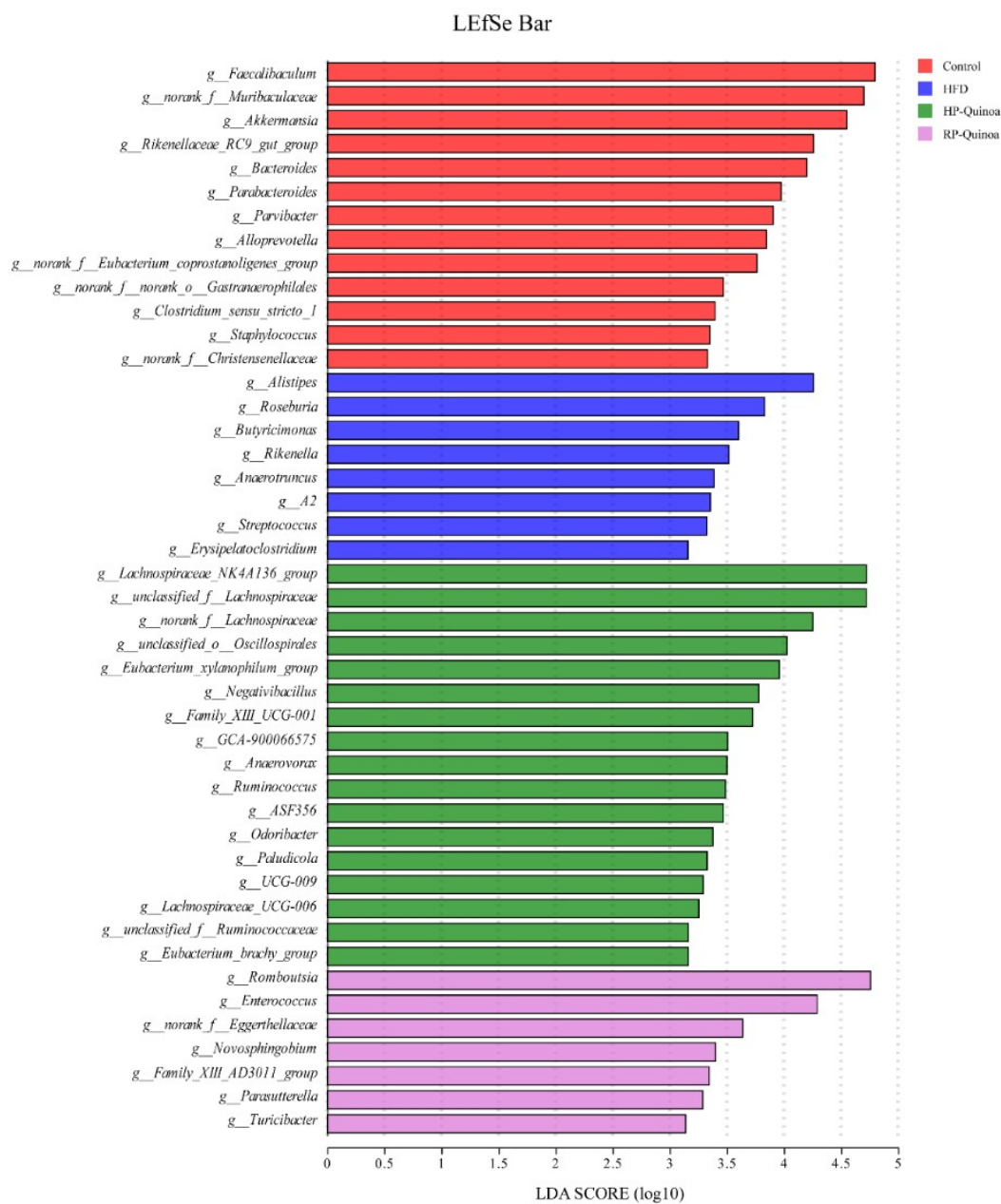
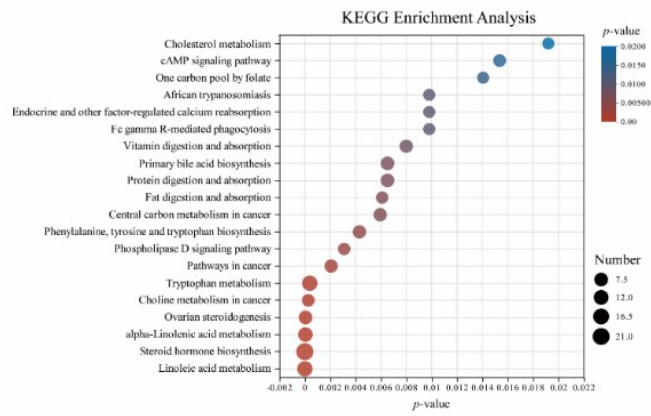


Figure S2. Linear discriminant analysis (LDA  $\geq$  3.0) of all groups.

A



B

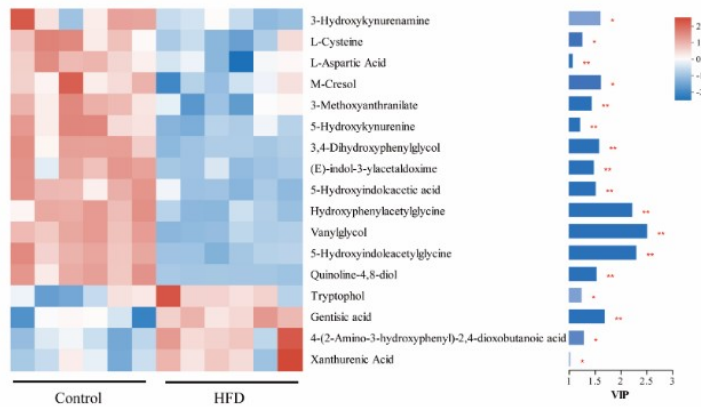


Figure S3. Effects of quinoa protein on fecal metabolomic profiles in mice. (A) KEGG enrichment analysis of RP-Quinoa group; (B) VIP analysis of HFD group and Control group fecal metabolomic profiles. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ,  $n=6$  mice/group.

KEGG, Kyoto Encyclopedia of Genes and Genomes; RP-Quinoa, raw quinoa protein; VIP, variable importance in projection.

Table S1 The basic composition of quinoa protein

Ingredient %	Starch	Crude protein	Crude fat	Crude fiber
Quinoa protein	1.18	85.2	5.25	0.09

**Table S2** Specific formulas of different feeds

Ingredient (g/kg)	Control	HFD	HP-Quinoa	RP-Quinoa
RP-Quinoa or HP-Quinoa	0	0	118.7	118.7
Casein	200	200	100	100
L-Cystine	3	3	3	3
Corn Starch	506.2	0	0	0
Maltodextrin 10	125	125	123.3	123.3
Sucrose	68.8	68.8	68.8	68.8
Cellulose, BW200	50	50	55.08	55.08
Soybean Oil	25	25	18.8	18.8
Lard	20	245	245	245
Mineral Mix S10026	10	10	10	10
DiCalcium Phosphate	13	13	13	13
Calcium Carbonate	5.5	5.5	5.5	5.5
Potassium Citrate, 1 H2O	16.5	16.5	16.5	16.5
Vitamin Mix, V10001	10	10	10	10
Choline Bitartrate	2	2	2	2
FD&C Blue Dye #1	0.01	0.05	0.05	0.05
FD&C Yellow Dye #5	0.04	0	0	0

Calculated energy (kcal%)

Protein	20	20	20	20
Fat	10	60	60	60
Carbohydrate	70	20	20	20

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Abbreviations: Control, normal chow diet; HFD, high-fat diet; HP-Quinoa, heat-treated quinoa protein replaced 50% of the casein in the original feed; RP-Quinoa, raw quinoa protein replaced 50% of the casein in the original feed