Table S1. Volunteer information

Donor information	A 49-year-old female with BMI 29.3
Health status	Normal blood lipid profile, normotensive, euglycemic with no chronic diseases. Had not taken any antibiotics or probiotics/prebiotics for at least 3 months.
Diet requirements	No special diet requirements (e.g., vegetarian, vegan etc.) or lifestyle.
Collection and preparation of volunteer fecal	The human volunteer's first feces in the morning was immediately installed in a sample box. 1 g of the feces was added into 100 mL 0.1 M PBS buffer (pH 7.2). Then, the fecal sample was thoroughly suspended in the buffer and was given to rats.

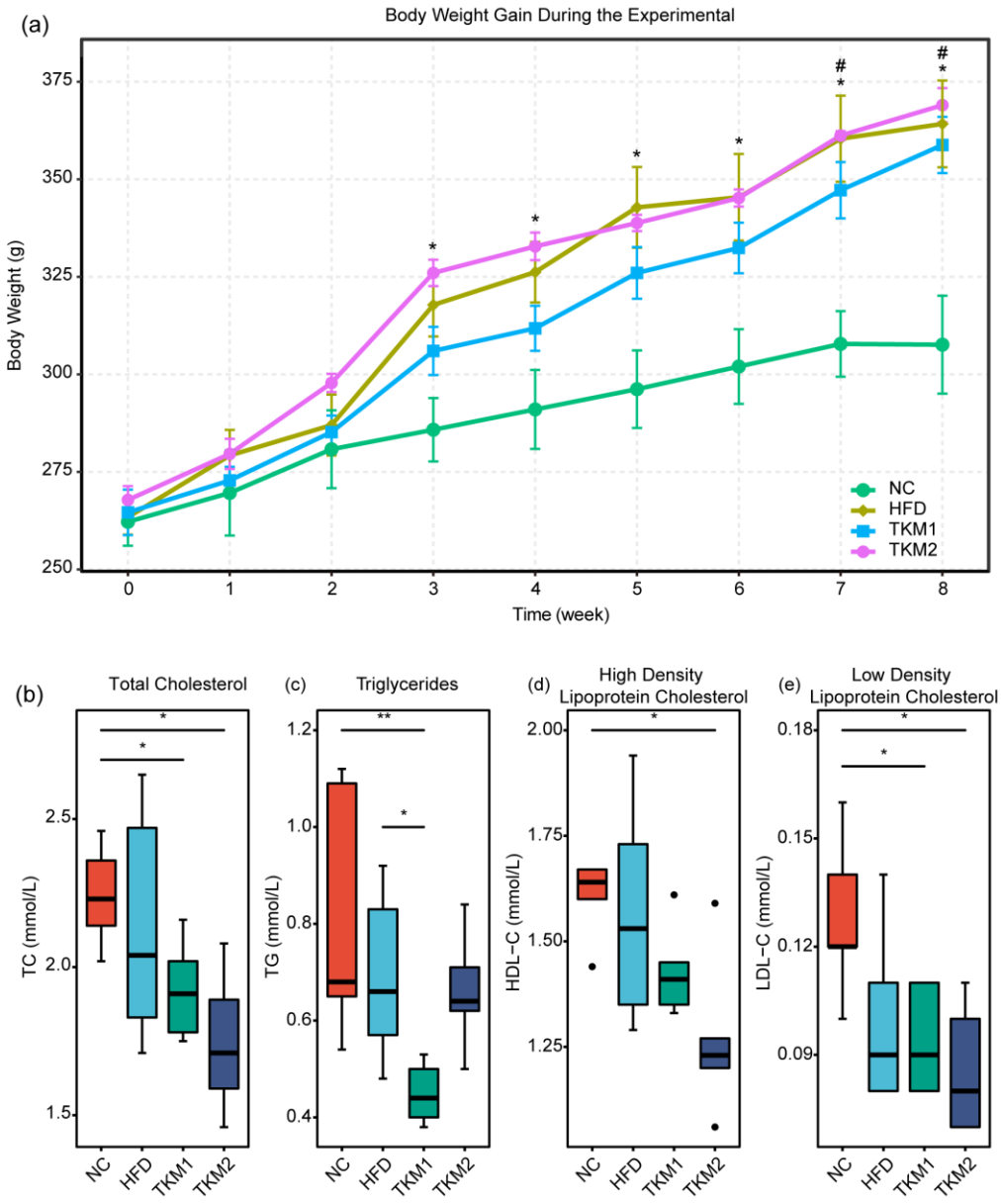

Figure S1. Body weight and serum lipid level

(a) The body weight changes during 8 weeks (mean ± SD), * indicates a statistically significant difference ($p < 0.05$) between HFD and NC group; # indicates a statistically significant difference ($p < 0.05$) between TKM1 and NC group; (b) Total Cholesterol, mmol/L; (c) Triglyceride, mmol/L; (d) High Density Lipoprotein Cholesterol, mmol/L; (e) Low Density Lipoprotein Cholesterol, mmol/L; *$p<0.05$; **$p<0.01$, analysis in *Wilcoxon* test. n = 5 for each group.

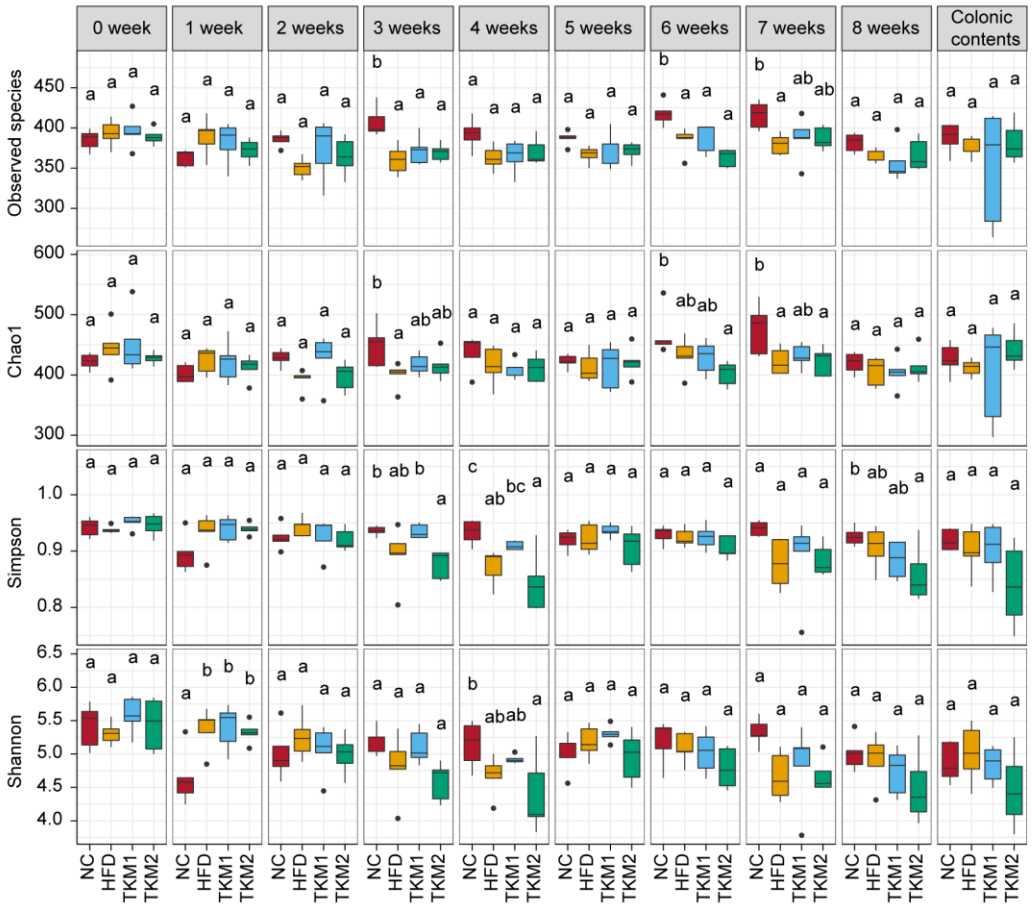

Figure S2. The richness and diversity of gut microbiota

16s rRNA Gene Sequencing of 199 samples (179 fecal samples and 20 colonic contents samples) from 20 HMA-rats were performed. Observed species and Chao1 indices reflect the richness of species, while Shannon and Simpson indexes represent microbial α-diversity.

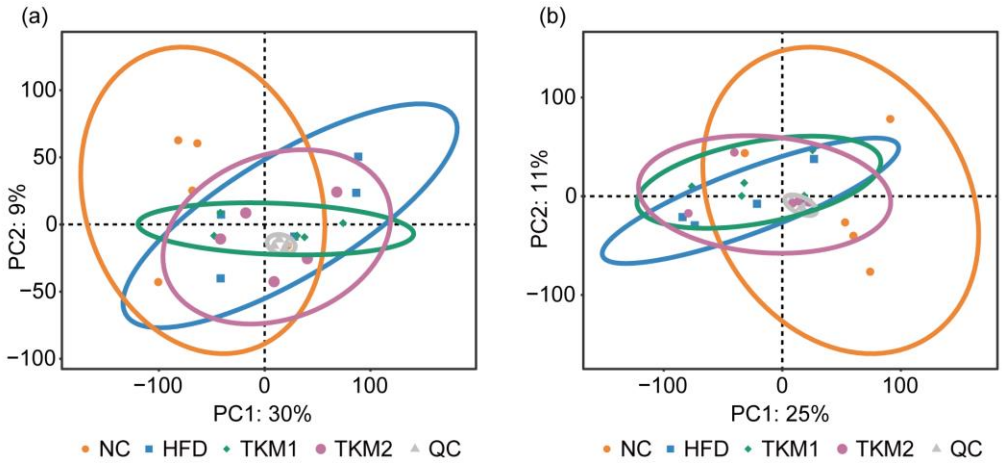

Figure S3. Differential metabolites analysis by PCA

(a) PCA score plot from positive ion mode; (b) PCA score plot from negative ion mode.