Electronic Supplementary Material (ESI) for Food & Function.

Table S1 Compositions of Four Diets.

	PCD	HCD	TKP	TKO
Corn starch (g)	508	508	508	508
Casein	242	242	242	242
Sucrose	119	119	119	119
Lard	50	50	50	50
Mineral mixture	40	40	40	40
Vitamin mixture	20	20	20	20
Gelatin	20	20	20	20
DL-methionine	1	1	1	1
Cholestyramine	5	0	0	0
Cholesterol	0	1	1	1
TKP (mg/day/kg body weight)	0	0	1000	0
TKO (mg/day/kg body weight)	0	0	0	200

HCD, a high cholesterol diet containing 0.1% cholesterol; PCD, a HCD with 0.5% cholestyramine; TKP, a HCD with daily oral administration of *tsao-ko* polyphenol extract (1000 mg/day/kg body weight) ; TKO, a HCD with daily oral administration of *tsao-ko* essential oil (200 mg/day/kg body weight)

Table S2 Quantitative Real-time PCR Primers Used to Measure Hamster RNA Levels

Gene	Forward primer 5’ to 3’	Reverse primer 5’ to 3’
Liver		
SREBP2	GGACTTGGTCATGGGAACAGATG	TGTAATCAATGGCCTTCCTCAGAAC
LXRα	AAGCCCTGCATGCCTACGT	TGCAGACGCAGTGCAAACA
HMG-CoA-R	CGAAGGGTTTGCAGTGATAAAGGA	GCCATAGTCACATGAAGCTTCTGTA
LDL-R	GCCGGGACTGGTCAGATG	ACAGCCACCATTGTTGTCCA
CYP7A1	GGTAGTGTGCTGTTGTATATGGGTTA	ACAGCCCAGGTATGGAATCAAC
GAPDH	GAACATCATCCCTGCATCCA	CCAGTGAGCTTCCCGTTCA
Intestine		
NPC1L1	CCTGACCTTTATAGAACTCACCACAGA	GGGCCAAAATGCTCGTCAT
ACAT2	CCGAGATGCTTCGATTTGGA	GTGCGGTAGTAGTTGGAGAAGGA
MTP	GTCAGGAAGCTGTGTCAGAATG	CTCCTTTTTCTCTGGCTTTTCA
ABCG5	TGATTGGCAGCTATAATTTTGGG	GTTGGGCTGCGATGGAAA
ABCG8	TGCTGGCCATCATAGGGAG	TCCTGATTTCATCTTGCCACC
Cyclophilin	CAAATGCTGGACCAAACACA	CAGTCTTGGCGGTGCAGAT

Table S3 Taxonomic Information of 23 key OTUs

OTU	Phylum	Class	Order	Family	Genus
OTU64	p__Bacteroidetes	c__Bacteroidia	o__Bacteroidales	f__Rikenellaceae	*g__Alistipes*
OTU192	p__Firmicutes	c__Erysipelotrichia	o__Erysipelotrichales	f__Erysipelotrichaceae	*g__Allobaculum*
OTU459	p__Firmicutes	c__Clostridia	o__Clostridiales	f__Family_XIII	*g__Anaerovorax*
OTU408	p__Bacteroidetes	c__Bacteroidia	o__Bacteroidales	f__Bacteroidaceae	*g__Bacteroides*
OTU76	p__Firmicutes	c__Clostridia	o__Clostridiales	f__Lachnospiraceae	*g__Coprococcus_2*
OTU76	p__Firmicutes	c__Clostridia	o__Clostridiales	f__Defluviitaleaceae	*g__Defluviitaleaceae_UCG-011*
OTU56	p__Proteobacteria	c__Deltaproteobacteria	o__Desulfovibrionales	f__Desulfovibrionaceae	*g__Desulfovibrio*
OTU282	p__Firmicutes	c__Bacilli	o__Lactobacillales	f__Carnobacteriaceae	*g__Granulicatella*
OTU234	p__Firmicutes	c__Clostridia	o__Clostridiales	f__Lachnospiraceae	*g__Lachnospiraceae_UCG-006*
OTU37	p__Firmicutes	c__Bacilli	o__Lactobacillales	f__Lactobacillaceae	*g__Lactobacillus*
OTU44	p__Firmicutes	c__Bacilli	o__Lactobacillales	f__Streptococcaceae	*g__Lactococcus*
OTU347	p__Actinobacteria	c__Actinobacteria	o__Bifidobacteriales	f__Bifidobacteriaceae	*g__Metascardovia*
OTU256	p__Bacteroidetes	c__Bacteroidia	o__Bacteroidales	f__Prevotellaceae	*g__Prevotellaceae_Ga6A1_group*
OTU394	p__Bacteroidetes	c__Bacteroidia	o__Bacteroidales	f__Rikenellaceae	*g__Rikenellaceae_RC9_gut_group*
OTU381	p__Firmicutes	c__Clostridia	o__Clostridiales	f__Ruminococcaceae	*g__Ruminococcaceae_UCG-014*
OTU287	p__Firmicutes	c__Clostridia	o__Clostridiales	f__Ruminococcaceae	*g__Ruminococcus_2*
OTU433	p__Firmicutes	c__Bacilli	o__Lactobacillales	f__Streptococcaceae	*g__Streptococcus*
OTU474	p__Firmicutes	c__Clostridia	o__Clostridiales	f__Clostridiales_vadinBB60_group	*g__norank_f__Clostridiales_vadinBB60_group*
OTU153	p__Firmicutes	c__Clostridia	o__Clostridiales	f__Ruminococcaceae	*g__norank_f__Ruminococcaceae*
OTU291	p__Firmicutes	c__Clostridia	o__Clostridiales	f__Christensenellaceae	*g__unclassified_f__Christensenellaceae*
OTU144	p__Actinobacteria	c__Actinobacteria	o__Coriobacteriales	f__Coriobacteriaceae	*g__unclassified_f__Coriobacteriaceae*
OTU34	p__Firmicutes	c__Erysipelotrichia	o__Erysipelotrichales	f__Erysipelotrichaceae	*g__unclassified_f__Erysipelotrichaceae*
OTU332	p__unclassified_k__norank	c__unclassified_k__norank	o__unclassified_k__norank	f__unclassified_k__norank	*g__unclassified_k__norank*

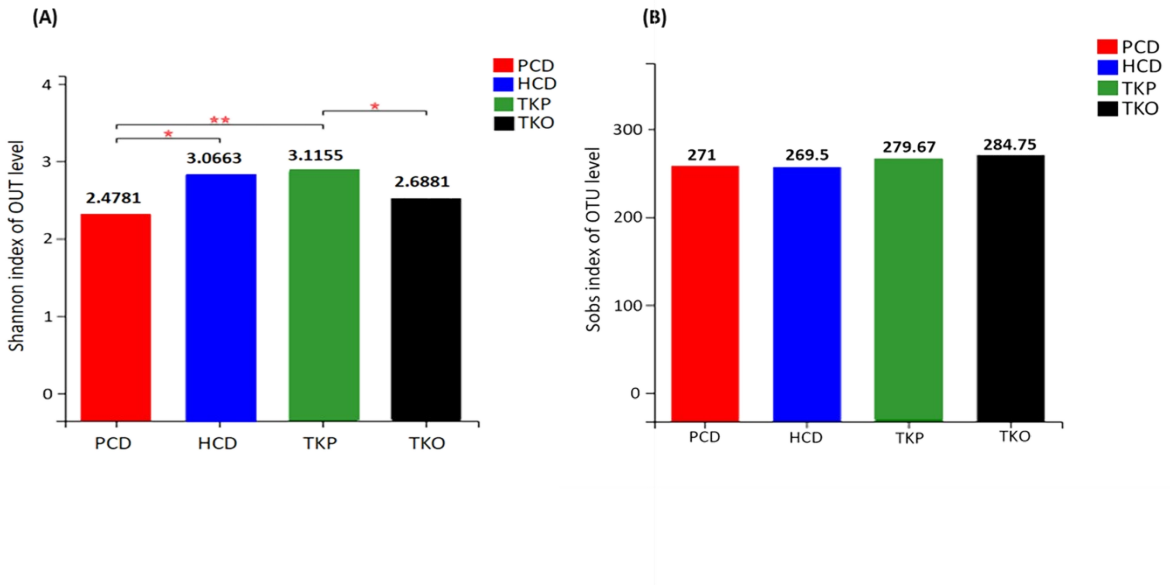

Figure S1. Alpha diversity of gut microbiota represented by (A) Shannon index and (B) Sobs index in hamsters fed one of the four diets. HCD, a 0.1% cholesterol diet; PCD, a HCD with 0.5% cholestyramine; TKP, a HCD with daily oral administration of *tsao-ko* polyphenol extract (1000 mg/kg body weight); TKO, a HCD with daily oral administration of *tsao-ko* essential oil (200 mg/kg body weight). Asterisks "*" and "**" indicate the significant difference at $p < 0.05$ and $p < 0.01$, respectively.

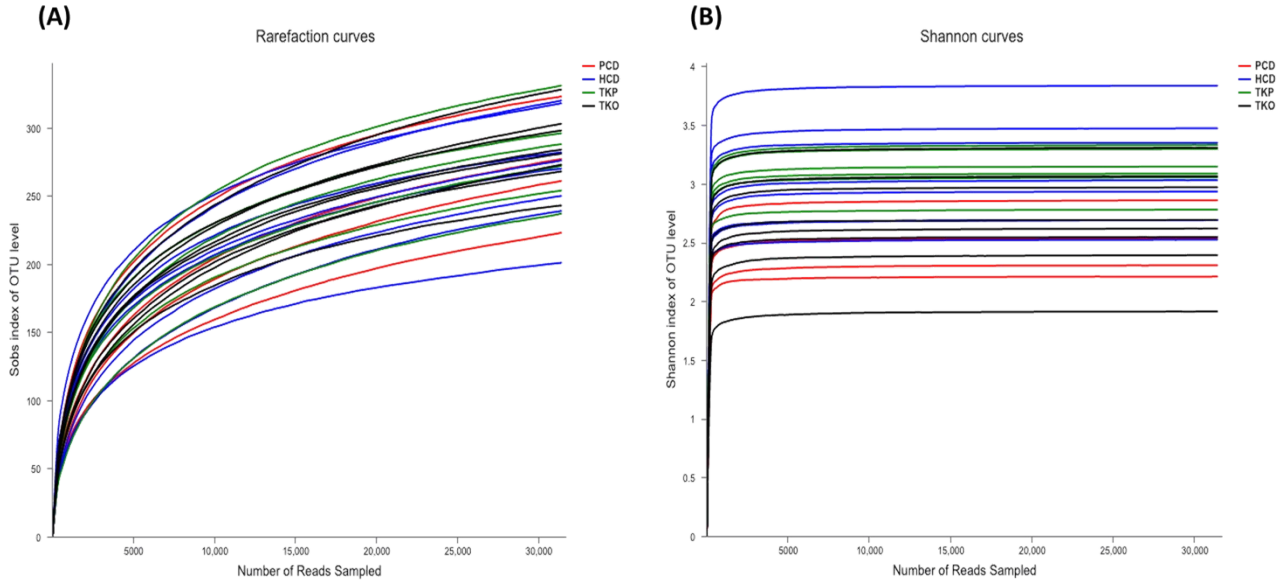

Figure S2. Rarefaction curves of (A) Sobs index and (B) Shannon index in hamsters fed one of the four diets. HCD, a 0.1% cholesterol diet; PCD, a HCD with 0.5% cholestyramine; TKP, a HCD with daily oral administration of *tsao-ko* polyphenol extract (1000 mg/kg body weight); TKO, a HCD with daily oral administration of *tsao-ko* essential oil (200 mg/kg body weight).

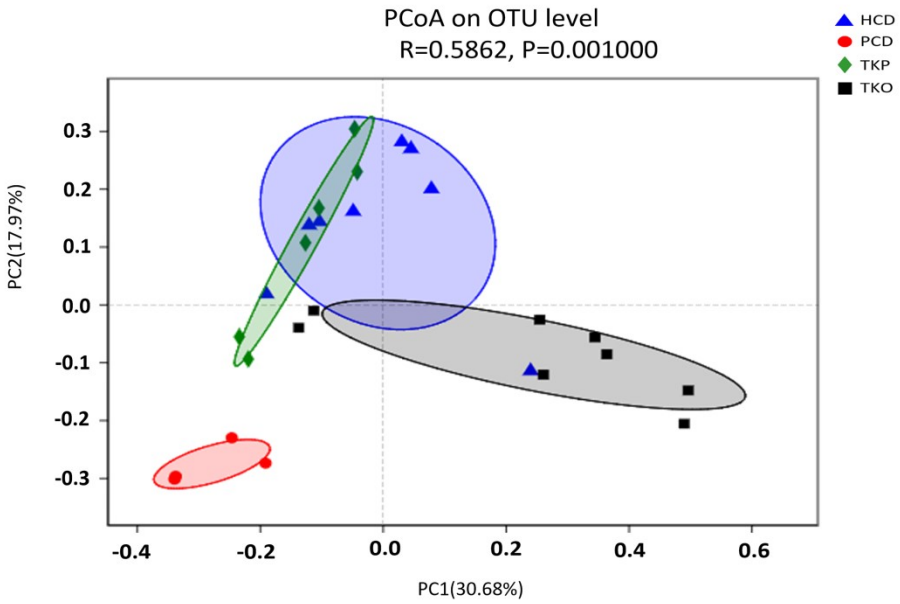

Figure S3. Beta diversity of the gut microbiota evaluated by unweighted UniFrac principle coordinate analysis (PCoA) plot based on OTUs abundance in hamsters fed one of the four diets. HCD, a 0.1% cholesterol diet; PCD, a HCD with 0.5% cholestyramine; TKP, a HCD with daily oral administration of *tsao-ko* polyphenol extract (1000 mg/kg body weight); TKO, a HCD with daily oral administration of *tsao-ko* essential oil (200 mg/kg body weight).

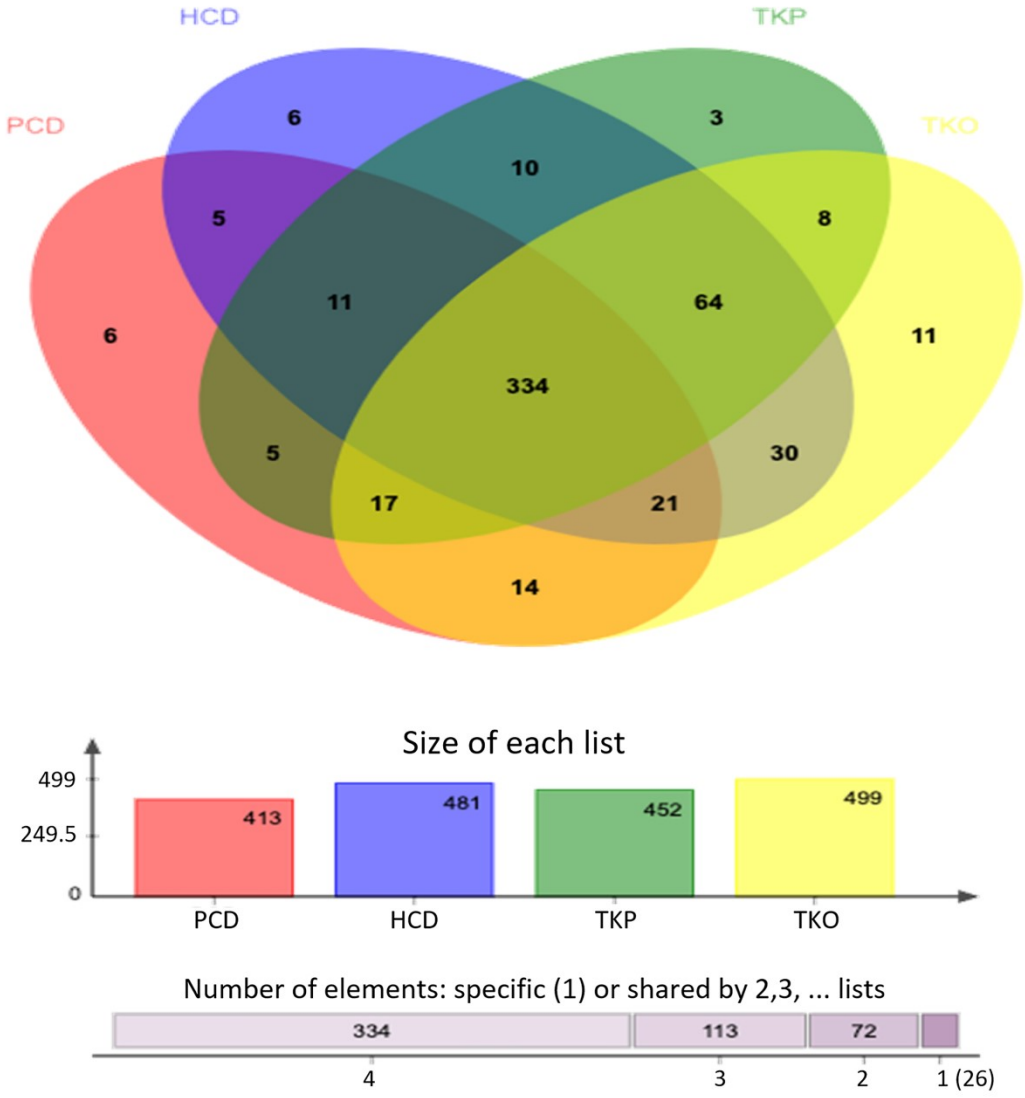

Figure S4. Venne diagram showing the unique and shared OTUs of gut microbiota in hamsters fed one of the four diets. HCD, a 0.1% cholesterol diet; PCD, a HCD with 0.5% cholestyramine; TKP, a HCD with daily oral administration of *tsao-ko* polyphenol extract (1000 mg/kg body weight); TKO, a HCD with daily oral administration of *tsao-ko* essential oil (200 mg/kg body weight).

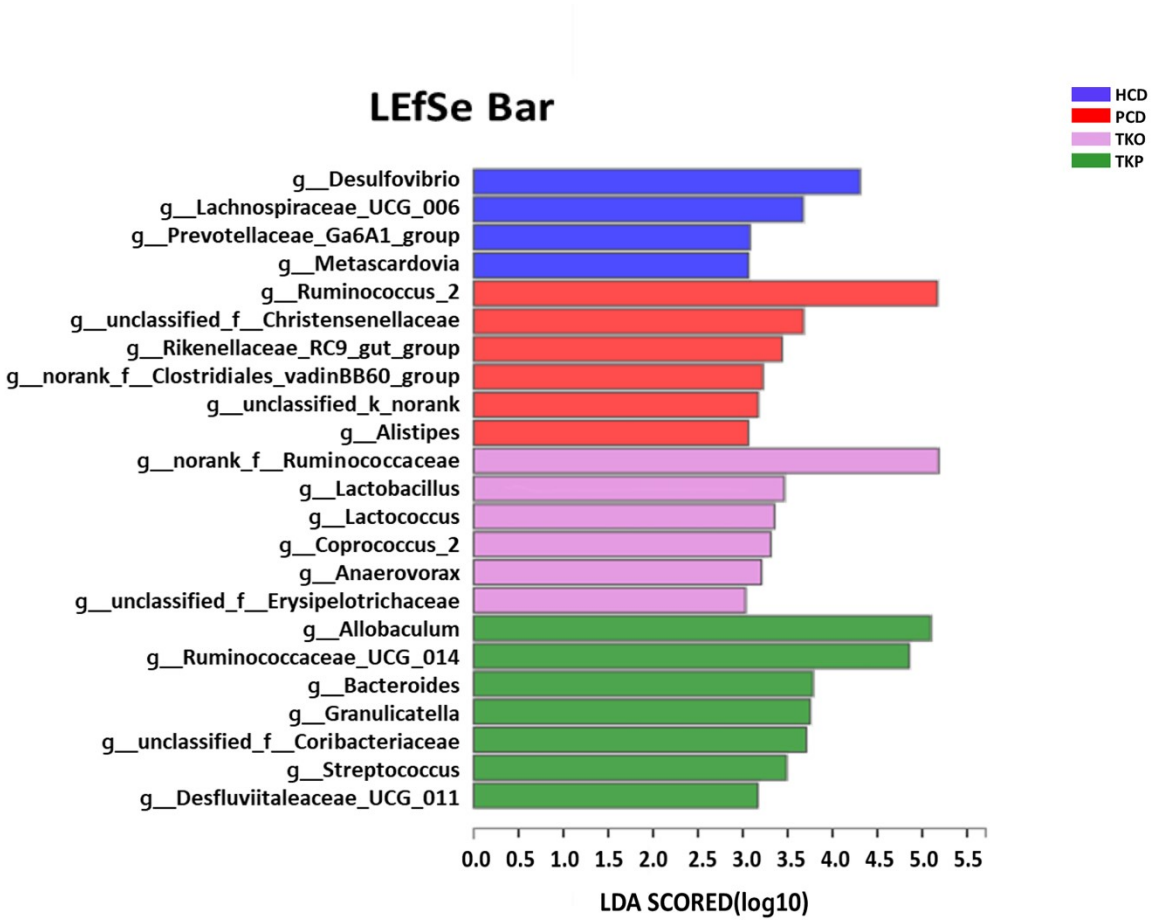

Figure S5. Linear discriminant analysis coupled with effect size (LEfSe) analysis in hamsters fed one of the four diets. HCD, a 0.1% cholesterol diet; PCD, a HCD with 0.5% cholestyramine; TKP, a HCD with daily oral administration of *tsao-ko* polyphenol extract (1000 mg/kg body weight); TKO, a HCD with daily oral administration of *tsao-ko* essential oil (200 mg/kg body weight).