Supplementary materials and methods

1. The calculation formulas for diarrhea indicators

Water content of the feces (%) = (wet weight - dry weight) / wet weight × 100%.

Diarrhea rate (%) = number of rats with loose stool in each group / total number of rats in each group × 100%.

Diarrhea index = loose stool rate × average fecal consistency.

Loose stool rate = number of loose stools per rat / total number of stools

2. Scoring criteria for abdominal withdrawal reflex (AWR)

Score	Behavioral performance
0	No behavioral response to abdominal distention
1	Brief head movement
2	Abdominal muscle contraction without elevating the abdomen
3	Elevation of the abdomen
4	Lifting of the pelvic structure and arching of the body

Table S1 Primer pairs for real-time quantitative PCR analysis

Gene	Forward Primer (5'-3')	Reverse Primer (5'-3')
β-actin	GCAGGAGTACGATGAGTCCG	ACGCAGCTCAGTAACAGTCC
IL-6	AAGCCAGAGTCATTCAGAGC	GTCCTTAGCCACTCCTTCTG
IL-7	TGAACTGCACAAGCAAGGAA	TACTGCTGTTCAAGATTTTATTCCA
IL-18	GAAACCCGCCTGTGTTCGAG	ATAGGGTCACAGCCAGTCCT
GRO/KC	CACTGCACCCAAACCGAAGT	TTGGGGACACCCTTTAGCATC
RANTES	CCTACCTCTCCCTCGCACTG	CTTGGCGGTTCCTTCGAGTG
5-HT3AR	AGAAGTGAGGTCGGACAAGAGCAT	TGAGGAAGATACTGGGCAGCAAG
5-HT3BR	AGGTCTTTTCTGAATGACAGCGAG	CAATGGACATCTGCGAATCACTAC

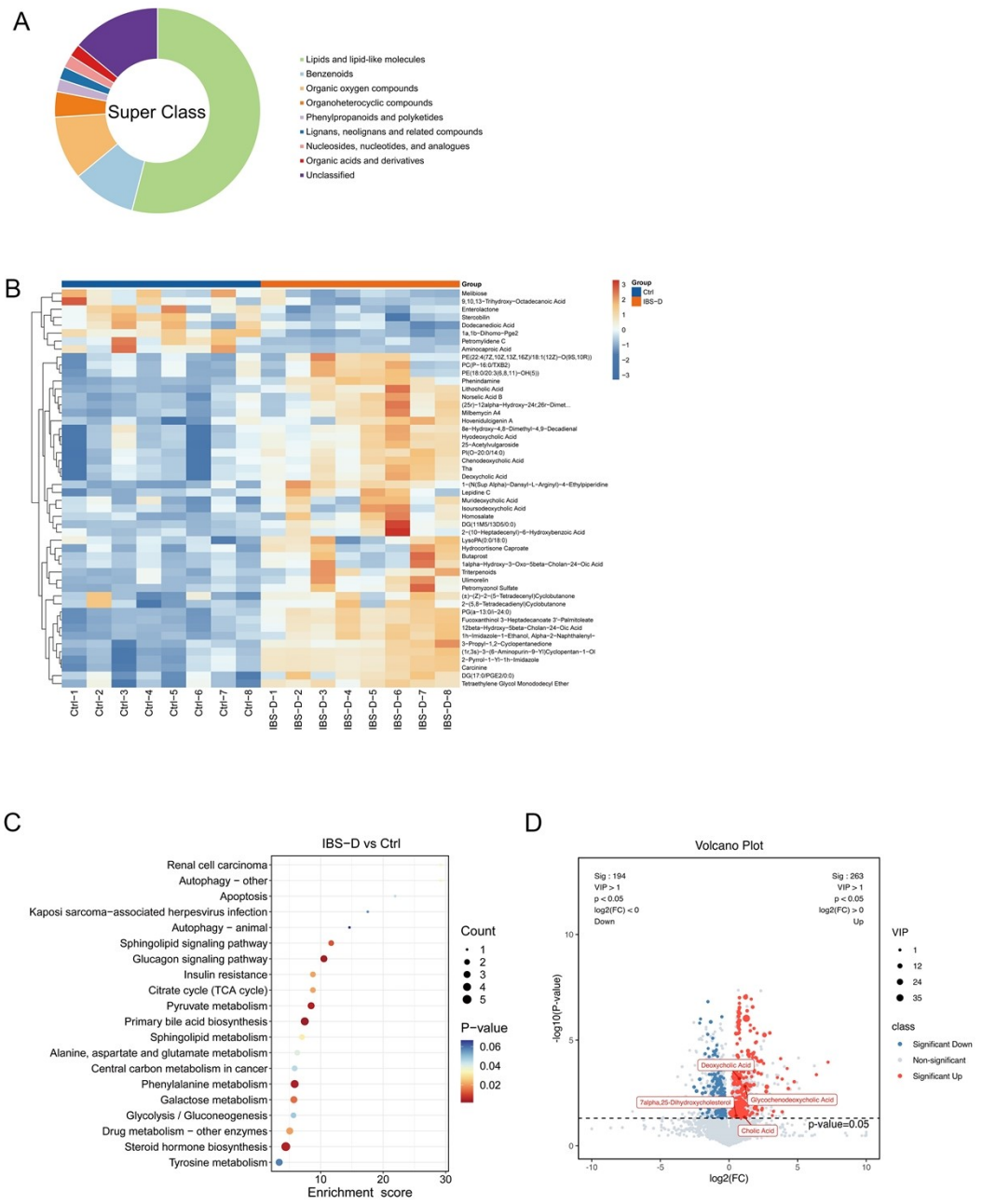

Figure S1. Changes in the metabolome of colon contents between the Ctrl and IBS-D groups. **(A)** Super class classification of the top 50 most importantly altered metabolites. **(B)**. Heatmap displaying hierarchical clustering of the top 50 most significantly altered metabolites between the Ctrl group and IBS-D group**. (C)** The top 20 most significant pathways identified from KEGG pathway analysis of the significantly altered metabolites between the Ctrl group and IBS-D group. **(D)** Differential metabolites between the Ctrl group and IBS-D group.