Sea cucumber sulfated polysaccharides and Lactobacillus gasseri synergistically ameliorate the overweight induced by altered gut microbiota in mice

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Fig. S1 Changes in body weight (A), daily intake (B), magnetic resonance imaging of fat distribution (C), LEE's index (D), and the amount of Lactic acid bacteria (E). Significant differences were based on one-way ANOVA with Duncan's range tests, whereas * stands for $p < 0.05$.

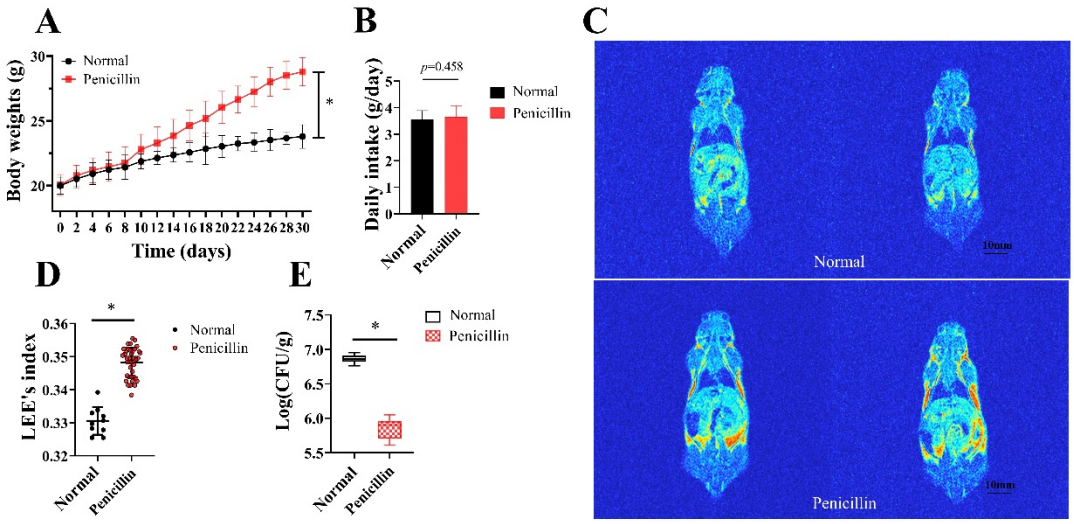
Fig. S2 The pie chart of relative abundance of gut mirobiota composition at phylum level in Normal group (A), Model group (B), SCSPsj+*L. gasseri* group(C), SCSPsj group (D) and *L. gasseri* group (E).

Fig. S3 The PCA graph of metabolites in serum samples (A) or feces samples (B).

Fig. S4 Comparison of metabolites between Normal and Model groups using OPLS-DA.

Fig. S5 The content of acetic acid (A), propionic acid (B), butyric acid (C), isobutyric acid (D) and valeric acid (E).

Table S1 Alpha diversity analysis index.



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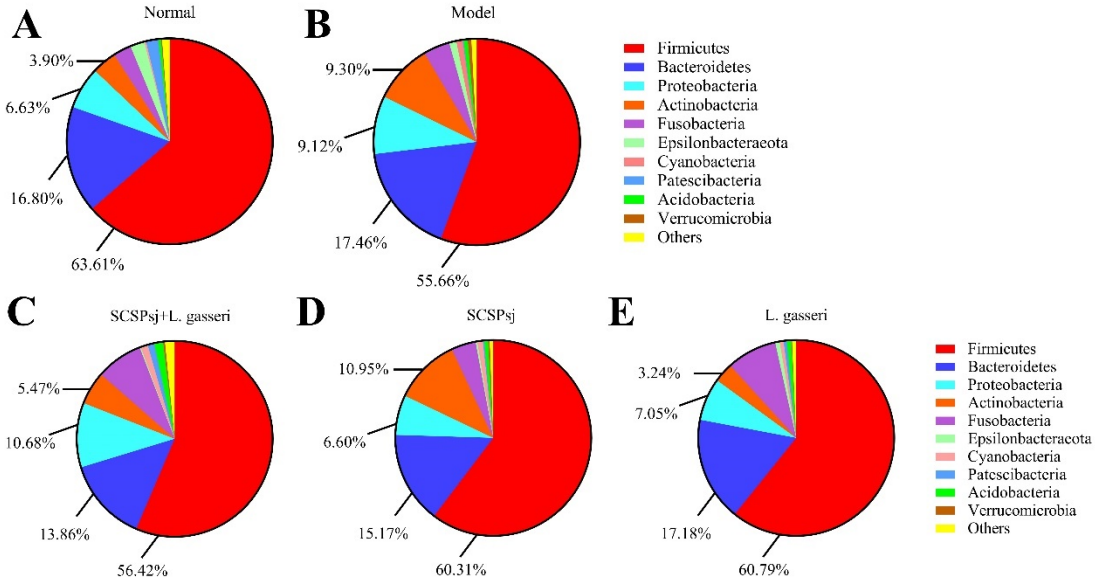

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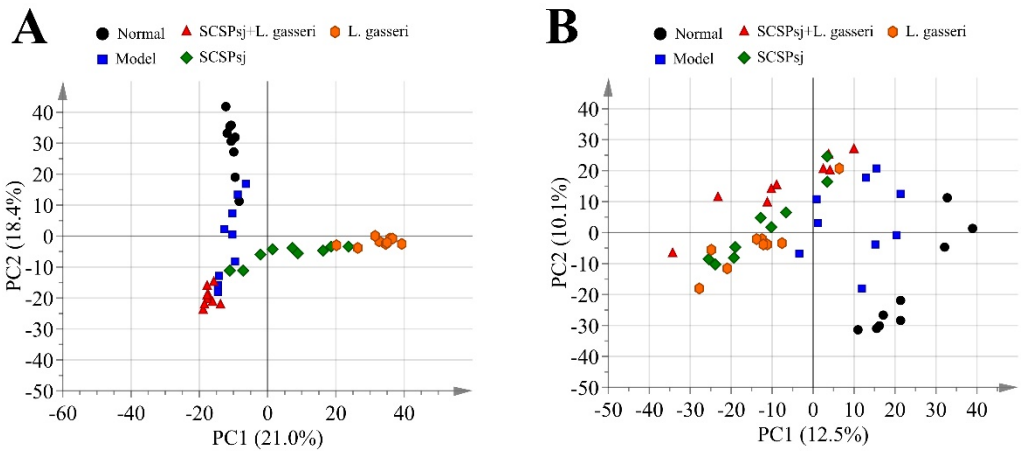

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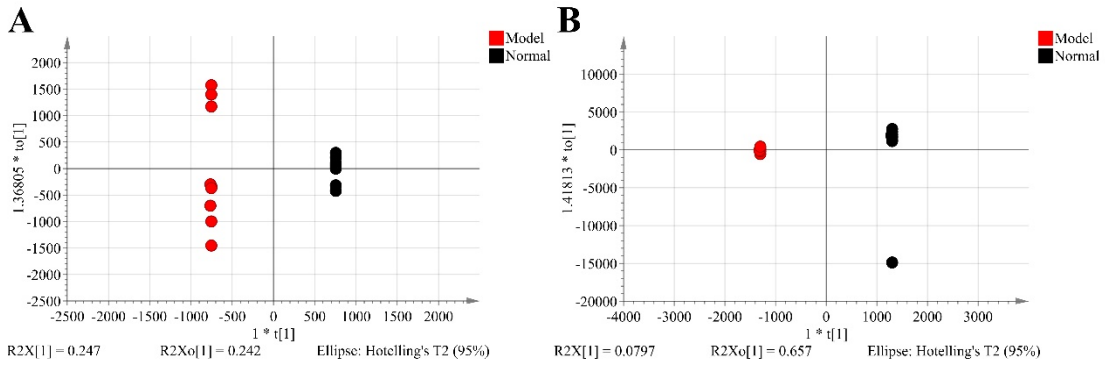

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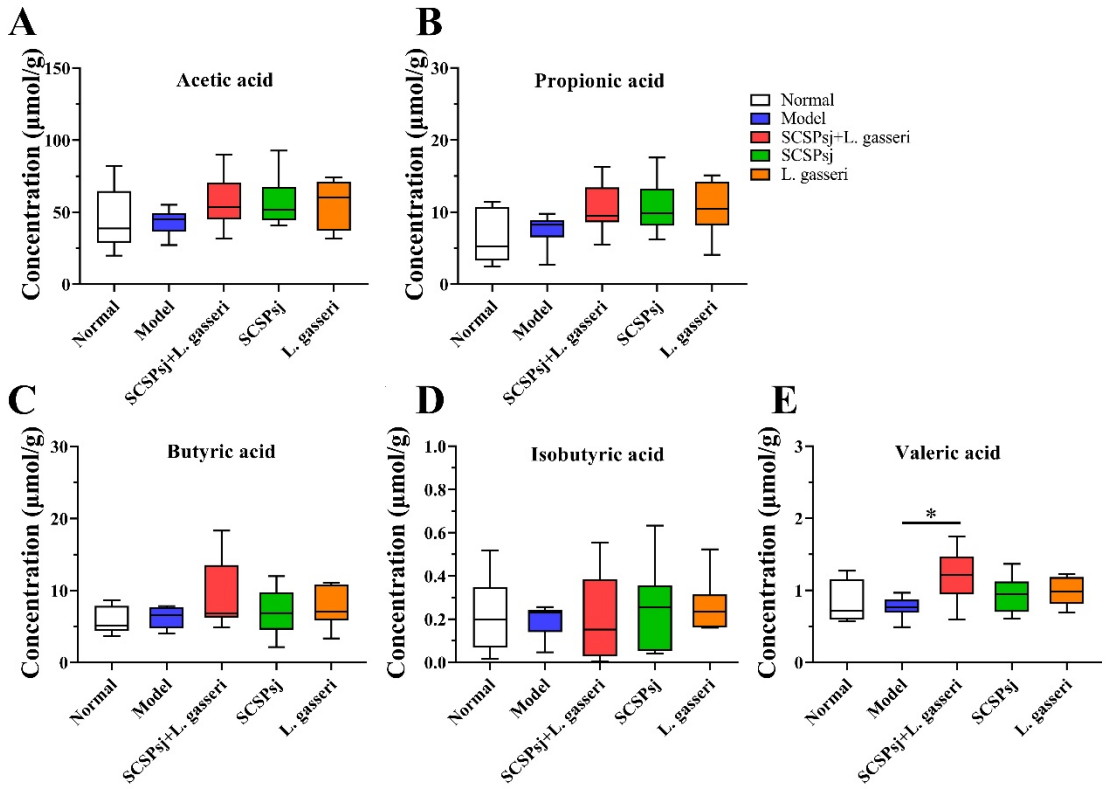

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Table S1 Alpha diversity analysis index.

Sample	OTUs	shannon	simpson	chao1	ACE	Goods coverage
Normal-1	722	6.6431	0.9755	787.5775	776.6377	0.9985
Normal-2	713	5.4195	0.9276	756.1818	750.2921	0.9988
Normal-3	641	6.6786	0.98	801.3788	778.9286	0.9976
Normal-4	663	6.4319	0.97	758.6742	771.459	0.9978
Normal-5	727	6.7992	0.9695	766.8438	749.2378	0.9991
Normal-6	453	6.2221	0.9725	556.9167	543.5267	0.9987
Normal-7	763	6.6766	0.9708	808.4918	796.9811	0.9989
Normal-8	650	5.413	0.934	692.5373	689.4026	0.9989
Model-1	654	6.5222	0.9787	722.7826	732.9612	0.9982
Model-2	615	6.0735	0.9597	657.3846	645.4088	0.9991
Model-3	773	5.3306	0.8916	816.082	802.319	0.9989
Model-4	762	6.8418	0.973	787.7381	779.5576	0.9991
Model-5	699	6.0687	0.9545	774.8333	763.0488	0.9986
Model-6	618	6.1485	0.9585	691.6154	673.4294	0.9987
Model-7	737	6.781	0.9677	763.8966	750.9707	0.9993
Model-8	680	5.2688	0.9246	715.1923	705.6425	0.999
SCSPsj+L.gasseri-1	768	6.9818	0.97	829.875	783.5467	0.9991
SCSPsj+L.gasseri-2	768	7.1003	0.9772	791.9032	781.484	0.9992
SCSPsj+L.gasseri-3	659	5.5962	0.898	691.5111	701.1962	0.9989
SCSPsj+L.gasseri-4	530	5.9106	0.9562	627.1154	617.4726	0.9984
SCSPsj+L.gasseri-5	612	5.5059	0.9371	662.3235	641.5332	0.9991
SCSPsj+L.gasseri-6	575	5.7508	0.9387	629.05	599.8719	0.9992
SCSPsj+L.gasseri-7	653	5.6089	0.9354	665.4286	662.3894	0.9994
SCSPsj+L.gasseri-8	659	6.1371	0.9564	682.4333	673.8375	0.9993
SCSPsj-1	672	5.3857	0.9066	720.3636	697.3543	0.9991
SCSPsj-2	510	5.4946	0.9507	602.1579	594.1848	0.9984
SCSPsj-3	687	5.9081	0.9539	713.7273	707.0321	0.9992
SCSPsj-4	625	5.7543	0.9464	686.9565	665.5734	0.9989
SCSPsj-5	677	6.5801	0.9679	708.2	693.7909	0.9993
SCSPsj-6	445	6.1592	0.9716	511.2791	517.3837	0.9989
SCSPsj-7	545	4.4281	0.9019	641.9429	634.2838	0.9984
SCSPsj-8	450	4.4542	0.8777	532.2692	527.4243	0.9987
L.gasseri-1	762	7.0107	0.9778	777.9184	776.7741	0.9993

L.gasseri-2	534	4.9774	0.8957	601.0286	578.8991	0.999
L.gasseri-3	658	6.1709	0.9691	729.4133	724.344	0.9985
L.gasseri-4	719	5.1765	0.9112	747.0588	740.6394	0.9991
L.gasseri-5	575	5.7891	0.9405	626.8485	616.751	0.999
L.gasseri-6	563	6.2187	0.9733	678.0984	678.4531	0.9983
L.gasseri-7	641	5.6353	0.9191	704.5714	698.728	0.9985
L.gasseri-8	474	6.3275	0.9753	544.2885	553.1123	0.9986