

Figure S1. Overview of sequencing analysis. (A) Rarefaction curves analysis. (B) Rank-abundance curves analysis. The curves tended to be stable, indicating that species representation in each sample approached the plateau phase and the sequencing quantity was reasonable. (C) Venn diagrams of the core and unique OTUs of TW0mg, TW10mg and TW40mg groups (following SV treatment for 2 weeks), and (D) Venn diagrams of the core and unique OTUs of FW0mg, FW10mg and FW40mg groups (following SV treatment for 4 weeks). OTU, operational taxonomic unit; SV, simvastatin; TW, 2-week SV treatment; FW, 4-week SV treatment.

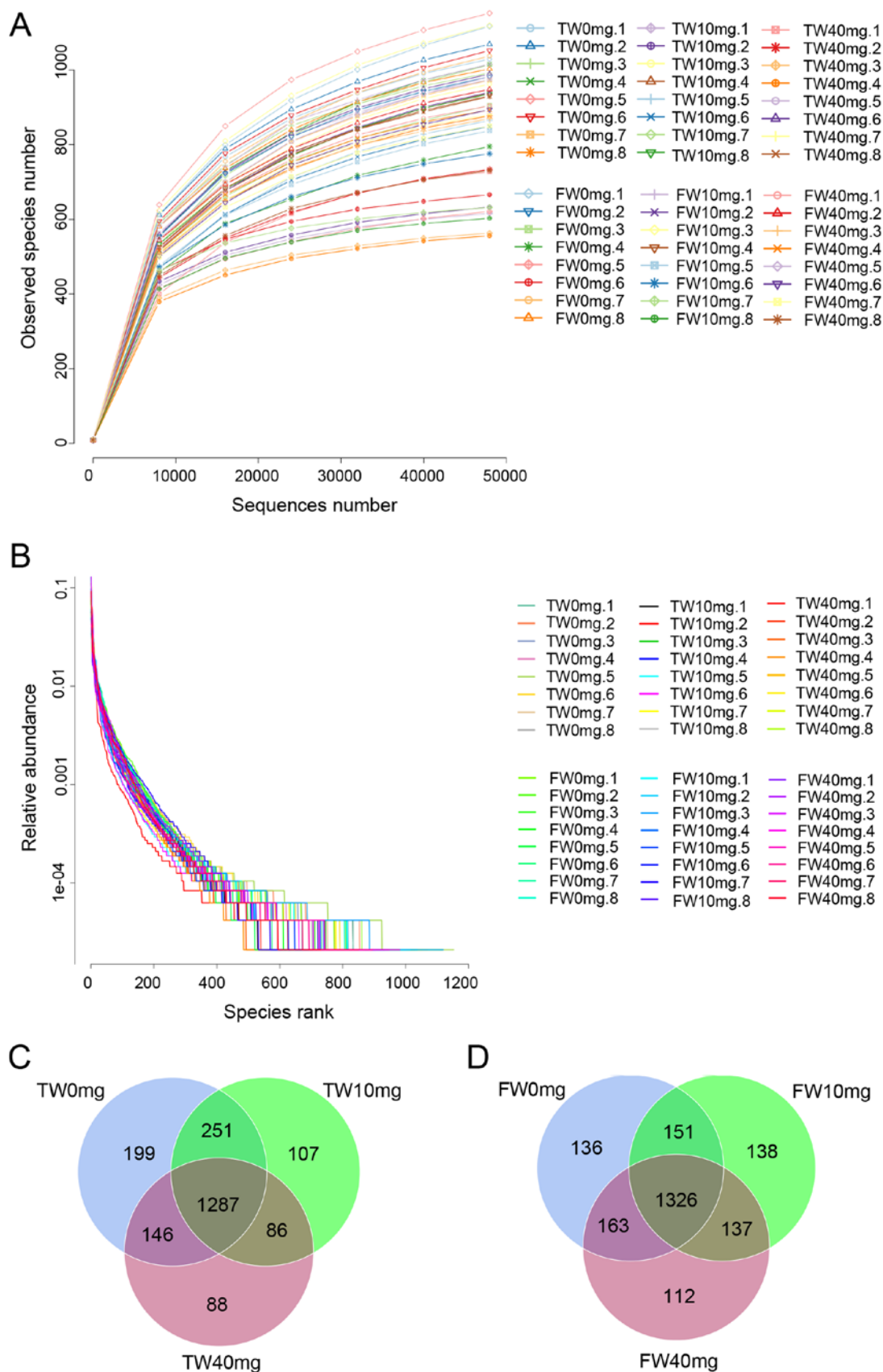


Figure S2. Analysis of similarities test to compare R values among different groups. (A) TW0mg vs. TW10mg. (B) TW0mg vs. TW40mg. (C) FW0mg vs. FW10mg. (D) FW0mg vs. FW40mg. The R value was considered well separated if >0 . Significance was considered at $P<0.05$. TW, 2-week SV treatment; FW, 4-week SV treatment.

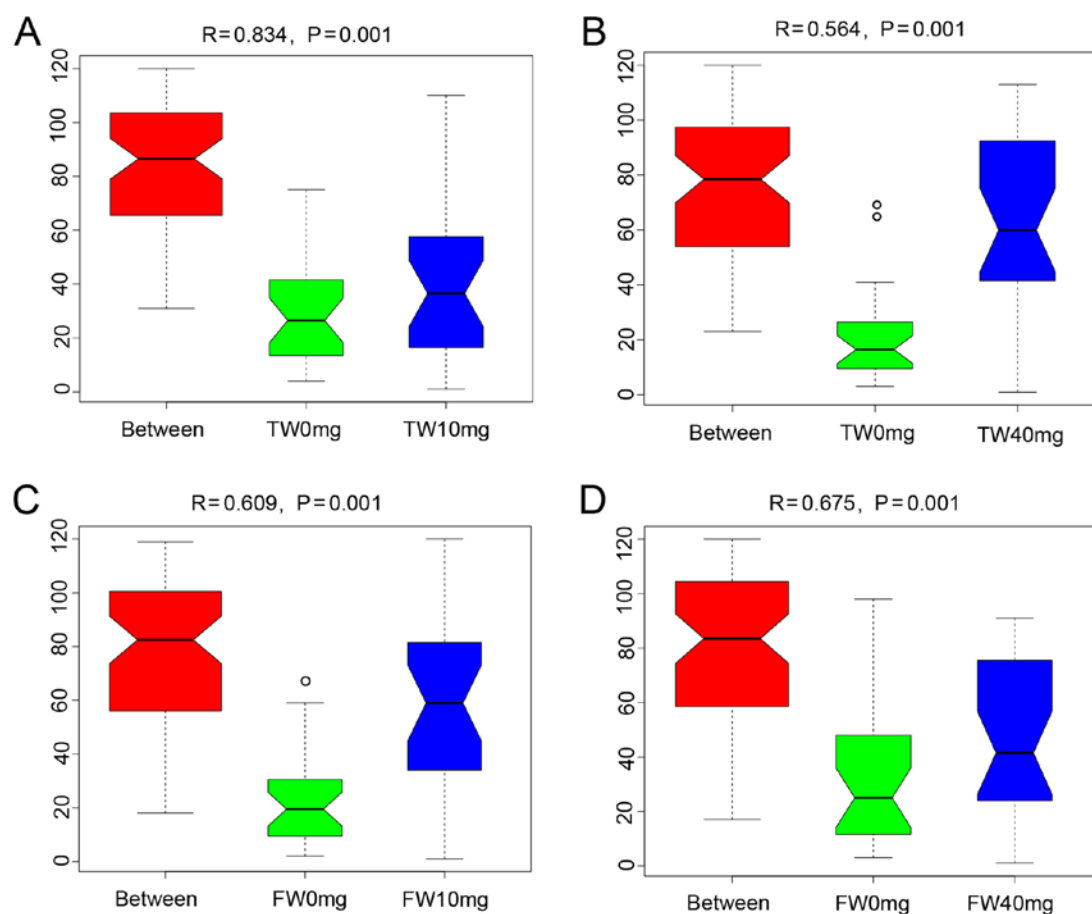


Table SI. Numbers of observed OTUs, depth of sequencing and α -diversity indices values of each sample.

Sample name	Richness and diversity indices at 97% similarity level							
	Reads	OTUs	Observed_species	Shannon	Simpson	Chao1	ACE	Goods_coverage
TW0mg.1	88,363	1,178	1,029	7.055	0.978	1146.006	1162.021	0.996
TW0mg.2	84,256	1,246	1,069	7.463	0.988	1204.000	1227.267	0.995
TW0mg.3	89,383	1,118	992	7.325	0.986	1086.565	1108.139	0.996
TW0mg.4	89,771	1,188	1,015	6.788	0.974	1162.368	1185.239	0.995
TW0mg.5	93,535	1,324	1,152	7.224	0.982	1301.584	1305.471	0.995
TW0mg.6	92,002	1,221	1,052	7.359	0.985	1234.627	1257.805	0.995
TW0mg.7	89,945	1,110	973	7.116	0.983	1124.426	1154.743	0.995
TW0mg.8	76,942	1,013	877	6.967	0.979	979.872	1009.334	0.996
TW10mg.1	92,319	674	616	6.909	0.981	675.381	674.790	0.998
TW10mg.2	88,044	681	633	6.920	0.982	695.443	697.658	0.998
TW10mg.3	88,407	1,105	962	6.698	0.974	1112.231	1145.353	0.995
TW10mg.4	85,821	1,084	938	6.492	0.969	1096.745	1110.212	0.995
TW10mg.5	76,716	1,005	865	6.292	0.965	987.359	1012.545	0.996
TW10mg.6	80,853	993	849	6.061	0.960	968.235	992.520	0.996
TW10mg.7	89,878	1,188	1,014	6.513	0.967	1157.679	1203.028	0.995
TW10mg.8	76,345	1,075	936	7.151	0.984	1119.221	1146.130	0.995
TW40mg.1	82,238	858	727	5.252	0.901	757.123	789.611	0.998
TW40mg.2	86,675	866	734	6.637	0.977	813.597	850.904	0.997
TW40mg.3	78,578	606	563	6.814	0.983	601.828	605.009	0.999
TW40mg.4	80,959	612	556	6.191	0.962	595.938	602.251	0.998
TW40mg.5	81,630	1,106	974	7.094	0.981	1095.341	1126.220	0.996
TW40mg.6	90,468	1,145	989	7.110	0.981	1111.366	1140.257	0.996
TW40mg.7	81,177	1,008	880	6.665	0.975	964.952	988.391	0.997
TW40mg.8	76,032	1,069	929	6.770	0.977	1053.555	1084.425	0.996
FW0mg.1	81,604	1,307	1,117	7.320	0.986	1286.567	1331.737	0.995
FW0mg.2	87,188	1,125	982	7.410	0.987	1115.811	1148.957	0.996
FW0mg.3	80,679	1,059	905	7.046	0.982	1028.164	1069.355	0.996
FW0mg.4	95,125	906	795	6.887	0.980	941.400	963.025	0.996
FW0mg.5	81,635	674	621	6.977	0.984	687.447	696.229	0.998
FW0mg.6	92,222	720	666	7.262	0.988	725.348	729.935	0.998
FW0mg.7	79,601	1,192	1,037	7.302	0.987	1179.837	1214.556	0.995
FW0mg.8	79,105	1,139	1,003	7.339	0.987	1123.389	1146.205	0.996
FW10mg.1	83,020	1,171	1,015	7.158	0.984	1133.235	1163.284	0.996
FW10mg.2	83,857	1,106	940	6.387	0.956	1076.704	1107.088	0.996
FW10mg.3	92,606	1,290	1,119	7.143	0.984	1257.864	1292.265	0.995
FW10mg.4	90,407	1,075	931	6.677	0.972	1055.349	1072.241	0.996
FW10mg.5	90,308	980	837	6.402	0.964	974.061	998.713	0.996
FW10mg.6	82,646	880	776	6.981	0.982	882.019	888.708	0.997
FW10mg.7	90,983	676	632	7.286	0.987	664.016	667.255	0.999
FW10mg.8	90,200	668	603	6.692	0.975	639.544	646.418	0.999
FW40mg.1	78,049	1,022	904	6.154	0.929	1007.840	1037.769	0.996
FW40mg.2	83,102	1,090	948	6.845	0.967	1085.110	1120.142	0.996
FW40mg.3	83,381	999	870	6.298	0.942	960.925	983.899	0.997
FW40mg.4	80,285	1,022	893	7.160	0.986	981.673	1018.075	0.996
FW40mg.5	86,037	1,147	982	6.713	0.975	1167.032	1189.152	0.995
FW40mg.6	77,336	1,059	894	6.641	0.975	1024.135	1069.824	0.996
FW40mg.7	82,613	977	850	6.944	0.980	981.275	989.167	0.996
FW40mg.8	89,952	843	731	6.806	0.978	822.333	835.510	0.997
Total	4,082,278	48,600						
Average								0.996

A total of 4,082,278 raw sequences were generated and assigned to a total of 48,600 OTUs based on 97% similarity. The α diversity indices values (Shannon, Simpson, ACE, Chao 1, goods_coverage) of each rat are provided in the table. OTU, operational taxonomic unit; ACE, abundance-based coverage estimator; TW, 2-week SV treatment; FW, 4-week SV treatment.

Table SII. Relative abundances of the predominant taxa profiles in the gut microbiota of rats.

Taxonomy	Groups					
	TW0mg	TW10mg	TW40mg	FW0mg	FW10mg	FW40mg
Phylum						
<i>Firmicutes</i>	0.573874	0.392687 ^{b, g}	0.388833 ^{b, g}	0.463598	0.440673	0.382234 ^d
<i>Bacteroidetes</i>	0.306447	0.485831 ^{b, g}	0.430251 ^{b, g}	0.409695	0.396505	0.547970 ^{f, g}
<i>Proteobacteria</i>	0.093360	0.101298	0.129602	0.082610	0.137738	0.049270 ^e
<i>Actinobacteria</i>	0.012457	0.004300 ^{c, g}	0.004475 ^{b, g}	0.011605	0.005559 ^d	0.005173 ^d
<i>Verrucomicrobia</i>	0.001600	0.000560	0.034335 ^{b, g}	0.021651	0.000305 ^{f, g}	0.001207 ^d
Phylum.Class						
<i>Gammaproteobacteria</i>	0.006268	0.022535 ^b	0.053091 ^a	0.006904	0.021555	0.001830 ^e
<i>unidentified_Actinobacteria</i>	0.010044	0.002992 ^{c, g}	0.002872 ^{c, g}	0.009687	0.003982 ^d	0.003516 ^e
<i>Clostridia</i>	0.532612	0.366679 ^a	0.344944 ^{c, g}	0.426277	0.398736	0.354058 ^d
<i>Erysipelotrichia</i>	0.026327	0.004563 ^{c, g}	0.022084	0.021041	0.021758	0.019483
<i>Negativicutes</i>	0.007341	0.015634 ^a	0.014070	0.008102	0.005752	0.003987
<i>Deltaproteobacteria</i>	0.056070	0.047410	0.054071	0.042669	0.060333	0.024458 ^d
<i>Bacteroidia</i>	0.305447	0.484819 ^b	0.429339 ^{b, g}	0.408491	0.395538	0.547175 ^{f, g}
Phylum.Class.Oder						
<i>Gastranaerophilales</i>	0.002882	0.009171 ^{b, g}	0.007894 ^b	0.003305	0.007404	0.008324
<i>Bifidobacteriales</i>	0.007334	0.001493 ^{c, g}	0.001486 ^{b, g}	0.008204	0.002458 ^e	0.001892 ^e
<i>Erysipelotrichales</i>	0.026327	0.004563 ^{c, g}	0.022084	0.021041	0.021758	0.019483
<i>Rhizobiales</i>	0.001861	0.000928 ^b	0.000787 ^{b, g}	0.001058	0.000985	0.001149
<i>Clostridiales</i>	0.532495	0.366502 ^a	0.344869 ^{c, g}	0.426199	0.398554	0.353920 ^d
<i>Enterobacteriales</i>	0.004540	0.021789 ^{c, g}	0.052418 ^a	0.004647	0.019499	0.001006 ^{f, g}
<i>Bacteroidales</i>	0.305447	0.484812 ^b	0.429339 ^b	0.408491	0.395538	0.547175 ^{f, g}
<i>Micrococcales</i>	0.001056	0.000516 ^{b, g}	0.000495 ^{b, g}	0.000584	0.000612	0.000599
<i>Verrucomicrobiales</i>	0.001587	0.000555	0.034325 ^b	0.021646	0.000292 ^f	0.001186 ^f
Class.Oder.Family						
<i>Bacteroidales_S24-7_group</i>	0.114443	0.054967 ^{c, g}	0.084244	0.178307	0.117904	0.119525 ^a
<i>Porphyromonadaceae</i>	0.019710	0.048947 ^b	0.027338	0.016423	0.025347	0.025175 ^a
<i>Verrucomicrobiaceae</i>	0.001587	0.000555	0.034325 ^{b, g}	0.021646	0.000292 ^c	0.001186 ^b
<i>Enterobacteriaceae</i>	0.004540	0.021789 ^b	0.052418 ^b	0.004647	0.019499	0.001006 ^b
<i>Bacteroidaceae</i>	0.077041	0.242549 ^{b, g}	0.184207 ^{b, g}	0.080246	0.118490 ^a	0.102322
<i>Erysipelotrichaceae</i>	0.026327	0.004563 ^{c, g}	0.022084	0.021041	0.021758	0.019483
<i>Peptostreptococcaceae</i>	0.041046	0.005692 ^{c, g}	0.017802 ^a	0.029574	0.016470	0.029357
<i>Peptococcaceae</i>	0.001420	0.001056	0.001071 ^a	0.001569	0.001287	0.000988 ^{c, f, g}
<i>Family_XIII</i>	0.004407	0.002327 ^a	0.002833 ^a	0.005223	0.003703	0.002984 ^{c, f, g}
<i>Veillonellaceae</i>	0.006755	0.002611 ^{c, g}	0.003620	0.007498	0.002150 ^b	0.001895 ^b
<i>Prevotellaceae</i>	0.089224	0.129803 ^a	0.126702	0.125467	0.124445	0.293613 ^{c, f, g}
<i>Bifidobacteriaceae</i>	0.007334	0.001493 ^{c, g}	0.001486 ^{c, g}	0.008204	0.002458 ^a	0.001892 ^c
Oder.Family.Genus						
<i>Ruminococcaceae_UCG-014</i>	0.006677	0.002838 ^b	0.006627	0.007542	0.004529	0.008678
<i>Bifidobacterium</i>	0.007333	0.001493 ^{c, g}	0.001485 ^{b, g}	0.008204	0.002458 ^d	0.001892 ^e
<i>Alloprevotella</i>	0.008769	0.014000	0.005778	0.007250	0.010914	0.044076 ^{f, g}
<i>Turicibacter</i>	0.024635	0.003630 ^{c, g}	0.019577	0.016369	0.020869	0.015806
<i>Ruminococcaceae_NK4A214_group</i>	0.012869	0.008363 ^a	0.012011	0.017930	0.008324 ^c	0.009851 ^{f, g}
<i>Oscillibacter</i>	0.026816	0.023457	0.014412 ^{b, g}	0.021049	0.020992	0.022613
<i>Ruminiclostridium_9</i>	0.042455	0.041814	0.031930 ^a	0.034158	0.035231	0.030624
<i>Blautia</i>	0.001577	0.002147	0.004211 ^a	0.000652	0.003479 ^f	0.001376 ^d
<i>Romboutsia</i>	0.041035	0.005681 ^{c, g}	0.017802 ^a	0.029568	0.016468	0.029350
<i>Parabacteroides</i>	0.018633	0.046185 ^b	0.025698	0.014821	0.023210	0.022910
<i>Prevotellaceae_NK3B31_group</i>	0.003414	0.001691	0.006364	0.005970	0.001970 ^e	0.006453
<i>Ruminococcaceae_UCG-009</i>	0.002739	0.001715 ^a	0.001616 ^{b, g}	0.003088	0.001987	0.001584 ^e
<i>Escherichia-Shigella</i>	0.004394	0.021633 ^{b, g}	0.050662 ^a	0.004563	0.019439	0.000941 ^{f, g}
<i>Sutterella</i>	0.001074	0.007519 ^{c, g}	0.004394 ^a	0.000847	0.003328 ^e	0.001272
<i>Family_XIII_AD3011_group</i>	0.002054	0.000956 ^b	0.001214 ^a	0.002330	0.001405 ^d	0.001118 ^e
<i>Akkermansia</i>	0.001587	0.000555	0.034325 ^{b, g}	0.021646	0.000292 ^f	0.001186 ^e
<i>Parasutterella</i>	0.005681	0.001895 ^a	0.006393	0.016976	0.008115	0.003417 ^e
<i>Bacteroides</i>	0.077041	0.242549 ^{c, g}	0.184207 ^{b, g}	0.080246	0.118490 ^d	0.102322
<i>Prevotella_9</i>	0.041400	0.042818	0.024924	0.053073	0.040535	0.132477 ^d

Table SII. Continued.

Taxonomy	Groups					
	TW0mg	TW10mg	TW40mg	FW0mg	FW10mg	FW40mg
<i>Intestinimonas</i>	0.011123	0.006825 ^{c,g}	0.007203 ^b	0.011146	0.006966 ^e	0.007863 ^e
<i>Prevotellaceae_Ga6A1_group</i>	0.010651	0.016754	0.041413 ^{b,g}	0.023569	0.020434	0.012934 ^d
<i>Allobaculum</i>	0.001217	0.000253 ^{c,g}	0.002043	0.004133	0.000459 ^e	0.003182
<i>Tyzzerella</i>	0.004368	0.001251 ^{c,g}	0.002231 ^{b,g}	0.004618	0.003341	0.002815
<i>Prevotellaceae_UCG-001</i>	0.004240	0.003815	0.005262	0.005262	0.002890 ^d	0.018279 ^{f,g}
<i>Prevotella_1</i>	0.008548	0.004261	0.007302	0.005415	0.001089 ^d	0.035557
<i>Anaerotruncus</i>	0.008853	0.009145	0.007565	0.008066	0.006586	0.005540 ^e
<i>Phascolarctobacterium</i>	0.000568	0.013004 ^{c,g}	0.010445 ^{c,g}	0.000594	0.003581 ^e	0.002082

^aP<0.05; ^bP<0.01; ^cP<0.001 vs. TW0mg group. ^dP<0.05; ^eP<0.01; ^fP<0.001 vs. FW0mg group. ^gq-value <0.05 was considered as statistically significant. Data are presented as the mean value. P-values were corrected for multiple comparisons with Benjamini and Hochberg false-discovery rate correction (q-value). TW, 2-week SV treatment; FW, 4-week SV treatment.