

Supplementary information for

***Saccharomyces boulardii* Alleviates DSS-Induced Intestinal Barrier  
Dysfunction and Inflammation in Humanized Mice**

**Supplementary Figure Caption:**

**Figure S1** Body weight change.

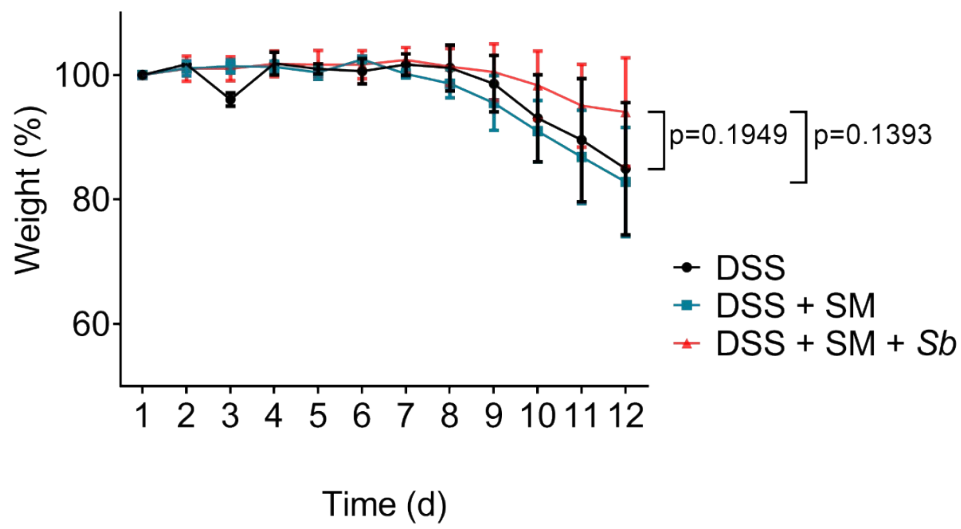
**Supplementary Table Captions:**

**Table S1** Information of the *Saccharomyces boulardii*-derived molecules.

**Table S2** Synthetic microbiota (SM) strain list.

**Table S3** Scoring system to calculate Disease Activity Index (DAI).

**Table S4** Primers used in Real-Time PCR assay.



**Figure S1** Body weight change. n = 5 mice per group. Mean values  $\pm$  SD are presented, p values were calculated using Unpaired T-test.

**Table S1.** Information of the *Saccharomyces boulardii*-derived molecules.

Extracts	Extraction methods	Purity (%)
Cell wall	Enzyme hydrolysis	$\beta$ -glucans and mannan $\geq 56.2\%$ ; Protein $\geq 18.3\%$
Cell wall hydrolysates	Enzyme hydrolysis	$\beta$ -glucans and mannan $\geq 66.5\%$ %; Protein $\geq 21.0\%$
Insoluble $\beta$ -glucans	Enzyme hydrolysis	$\geq 88.9\%$
Water-soluble $\beta$ -glucans	Enzyme hydrolysis	$\geq 94.2\%$
Mannan	Enzyme hydrolysis	$\geq 73.9\%$
Polypeptides	Enzyme hydrolysis	$\geq 76.3\%$

**Table S2** Synthetic microbiota (SM) strain list.

Species	Strain	Source
<i>Akkermansia muciniphila</i>	DSM 22959	DSMZ
<i>Bacillus pumilus</i>	red1	Isolated
<i>Bacteroides caccae</i>	CNGBCC 1800358	BGI
<i>Bacteroides cellulosilyticus</i>	DSM 108229	DSMZ
<i>Bacteroides clarus</i>	CNGBCC 1801343	BGI
<i>Bacteroides coprocola</i>	CNGBCC 1801377	BGI
<i>Bacteroides dorei</i>	CNGBCC 1800738	BGI
<i>Bacteroides eggerthii</i>	CNGBCC 1800652	BGI
<i>Bacteroides fragilis</i>	WWZ0331	Isolated
<i>Bacteroides fragilis</i>	CNGBCC 1800256	BGI
<i>Bacteroides intestinalis</i>	DSM 17393	DSMZ
<i>Bacteroides stercoris</i>	CNGBCC 1800163	BGI
<i>Bacteroides thetaiotaomicron</i>	CNGBCC 1800698	BGI
<i>Bacteroides uniformis</i>	CNGBCC 1800263	BGI
<i>Bacteroides vulgatus</i>	CNGBCC 1800357	BGI
<i>Bacteroides vulgatus</i>	CNGBCC 1800621	BGI
<i>Bifidobacterium adolescentis</i>	D15	Isolated
<i>Bifidobacterium animalis</i>	BB12	Lab
<i>Bifidobacterium bifidum</i>	C3	Isolated
<i>Bifidobacterium breve</i>	BNCC 185972	Lab
<i>Bifidobacterium infantisreuter</i>	BNCC 341709	Lab
<i>Bifidobacterium lactis</i>	NH019	Lab
<i>Bifidobacterium longum</i>	R175	Lab
<i>Bifidobacterium pseudocatenulatum</i>	JWA256	Isolated

<i>Blautia obeum</i>	CNGBCC 1801685	BGI
<i>Butyrivibrio crossotus</i>	CNGBCC 1850014	BGI
<i>Clostridium bolteae</i>	CNGBCC 1850021	BGI
<i>Clostridium butyricum</i>	DS1	Lab
<i>Clostridium perfringens</i>	CNGBCC 1800374	BGI
<i>Clostridium leptum</i>	DSM 753	DSMZ
<i>Collinsella aerofaciens</i>	CNGBCC 1800740	BGI
<i>Coprococcus comes</i>	ATCC 27758	ATCC
<i>Dorea formicigenerans</i>	CNGBCC 1850024	BGI
<i>Enterococcus faecalis</i>	BNCC 186300	Lab
<i>Erysipelatoclostridium ramosum</i>	CNGBCC 1800439	BGI
<i>Escherichia coli</i>	K12	Lab
<i>Eubacterium rectale</i>	CNGBCC 1801156	BGI
<i>Fusobacterium nucleatum subsp. Animalis</i>	CNGBCC 1850029	BGI
<i>Lactobacillus acidophilus</i>	B2023	Isolated
<i>Lactobacillus brevis</i>	M1019	Isolated
<i>Lactobacillus casei</i>	A8	Isolated
<i>Lactobacillus crispatus</i>	JQ1	Lab
<i>Lactobacillus delbrueckii</i>	CNGBCC 1801758	BGI
<i>Lactobacillus delbrueckii subsp.</i>	BNCC 137361	Lab
<i>Lactobacillus fermentum</i>	CNGBCC 1800629	BGI
<i>Lactobacillus fermentus</i>	557	Lab
<i>Lactobacillus gasseri</i>	M1009	Isolated
<i>Lactobacillus helveticus</i>	R52	Lab
<i>Lactobacillus paracasei</i>	LPC37	Lab
<i>Lactobacillus plantarum</i>	WCFS1	Lab
<i>Lactobacillus plantarum</i>	CNGBCC 1800069	BGI

<i>Lactobacillus reuteri</i>	M1011	Isolated
<i>Lactobacillus rhamnosus</i>	LGG	Lab
<i>Lactobacillus ruminis</i>	CNGBCC 1800650	BGI
<i>Lactobacillus sakei subsp. sakei</i>	BNCC 185970	Lab
<i>Lactobacillus salivarius</i>	CNGBCC 1800727	BGI
<i>Lactobacillus vaginalis</i>	CNGBCC 1800088	BGI
<i>Lactococcus garvieae</i>	JWA207	BGI
<i>Lactococcus lactis</i>	CNGBCC 1801004	BGI
<i>Leuconostoc mesenteroides</i>	BNCC 195309	Lab
<i>Leuconostoc mesenteroides subsp. Mesenteroides</i>	BNCC 353743	Lab
<i>Odoribacter splanchnicus</i>	CNGBCC 1800731	BGI
<i>Parabacteroides distasonis</i>	CNGBCC 1800352	BGI
<i>Parabacteroides merdae</i>	CNGBCC 1800675	BGI
<i>Pediococcus acidilactici</i>	JWA175	Lab
<i>Prevotella copri</i>	CNGBCC 1802008	BGI
<i>Roseburia hominis</i>	CNGBCC 1850049	BGI
<i>Roseburia intestinalis</i>	CNGBCC 1850050	BGI
<i>Roseburia inulinivorans</i>	DSM 108070	DSMZ
<i>Ruminococcus bromii</i>	CNGBCC 1800554	BGI
<i>Ruminococcus gnavus</i>	CNGBCC 1800747	BGI
<i>Ruminococcus lactaris</i>	ATCC 29176	ATCC
<i>Ruminococcus obeum</i>	JCM 31340	Lab
<i>Ruminococcus torques</i>	CNGBCC 1800479	BGI
<i>Sporosarcina koreensis</i>	PC9	Isolated
<i>Streptococcus salivarius</i>	CNGBCC 1800167	BGI
<i>Streptococcus thermophilus Orla-Jensen</i>	BNCC 335885	Lab



**Table S3** Scoring system to calculate Disease Activity Index (DAI)<sup>(a)</sup>.

Score	Body weight decrease (%)	Stool consistency	Bleeding in feces
0	None	Normal <sup>(b)</sup>	No bleeding
1	0.1-5	-	-
2	5-10	Loose	Slight bleeding
3	10-20	-	-
4	>20	Diarrhea	Gross bleeding

(a) The DAI is calculated as the sum of the scores for weight loose, stool consistency, and bleeding in feces.



**Table S4** Primers used in Real-Time PCR assay.

Primer name	Sequence
$\beta$ -actin(F)	TGGATGACGATATCGCTGCG
$\beta$ -actin(R)	AGGGTCAGGATACCTCTCTT
IL-1 $\beta$ (F)	GCTTCAGGCAGGCAGTATCA
IL-1 $\beta$ (R)	TGCAGTTGTCTAATGGGAACG
IL-6(F)	CCGGAGAGGAGACTTCACAG
IL-6(R)	TCCACGATTTCCCAGAGAAC
IL-10(F)	GGTTGCCAAGCCTTATCGGA
IL-10(R)	ACCTGCTCCACTGCCTTGCT
IL-12(F)	GTGAACCTCACCTGTGACACGC
IL-12(R)	TGAATACTTCTCATAGTCCCTTTGG
IL-17(F)	GCAAGAGATCCTGGTCCTGA
IL-17(R)	AGCATCTTCTCGACCCTGAA
IL-18(F)	AAGTAAGAGGACTGGCTGTG
IL-18(R)	CTCGGGTATTCTGTTATGGA
IL-23(F)	CCAGCAGCTCTCTCGGAATC
IL-23(R)	GATTCATATGTCCCGCTGGTG
CXCL-1(F)	CCCAAATCTACAAGTAGCC
CXCL-1(R)	GATACACCTCTTGACGATC
TNF- $\alpha$ (F)	AGCCGATGGGTTGTA
TNF- $\alpha$ (R)	ACTTGGGCAGATTGA