Supplementary Table 1 List of institutional review board approval numbers

Site number	Site name	IRB approval number
1	Samsung Kangbuk Hospital	2023-10-019
2	The Catholic University of Korea, Daejeon St.Mary's Hospital	DC23MDDT0076
3	Pusan National University Yangsan Hospital	14-2023-008
4	Wonkwang University Hospital	2023-10-022
5	The Catholic University of Korea, Eunpyeong St. Mary's Hospital	PC23MDDT0177
6	Hanyang University Guri Hospital	2023-10-011
7	Chung-Ang University Hospital	2401-015-586

Supplementary Table 2 Complete list of exclusion criteria

List of exclusion criteria
Those undergoing a colonoscopy for the following therapeutic purposes: (1) Balloon dilation of a stricture area; (2) Decompression of non-toxic megacolon or sigmoid volvulus; (3) Removal of foreign substances; (4) Treatment of bleeding after vascular metaplasia, ulcer, tumor, or polyp resection; (5) Palliative treatment for stricture or tumor hemorrhage
Those with a confirmed medical history of the following condition at the time of the screening visit: (1) Severe heart disease within the 24 weeks before the screening (unstable angina, acute myocardial infarction, acute heart failure, myocarditis, etc.) or acute respiratory failure; (2) Epilepsy or seizures within 96 weeks before screening; (3) Clinically significant surgery history regardless of the period (e.g., ostomy, colectomy, etc.). Appendectomy and hemorrhoid surgery are excluded
Those confirmed or suspected to have the following comorbidities at the screening visit: (1) Active bowel bleeding; (2) Gastrointestinal obstruction (bowel obstruction, gastrointestinal closure, etc.), gastrointestinal perforation, impaired gastric emptying (gastroparesis, gastric retention, etc.); (3) Inflammatory bowel diseases (ulcerative colitis, Crohn's disease, toxic megacolon, toxic colitis, etc.); (4) Gastrointestinal and colonic mucosal ulcers, ischemic colitis;

(5) Acute abdominal conditions requiring surgical intervention; (6) Those confirmed to have the following major cardiovascular diseases: Congestive heart failure; NYHA functional classification III or IV; Clinically significant arrhythmias confirmed by ECG, such as QTcF prolongation (male > 450 ms, female > 470 ms) ,QTc interval corrected using Fridericia's formula; (7) Uncontrolled hypertension (SBP > 170 mmHg and DBP > 100 mmHg) despite adequate drug therapy; (8) Diabetes that is under or requires insulin treatment; (9) Clinically significant electrolyte abnormalities (sodium, potassium, calcium, magnesium, chloride, bicarbonate, phosphorus, etc.); (10) Those at risk of dehydration (rhabdomyolysis, ascites, etc.); (11) Severe renal impairment (eGFR < 30 mL/min/1.73 m^2); MDRD-eGFR (mL/min/1.73 m^2) = 186 × (serum creatinine concentration)-1.154 × (age)-0.203 (× 0.742, in case of women); (12) Child–Pugh class B or C; (13) AST or ALT > 3 times the institutional upper limit of normal; (14) Severe nausea or vomiting significant enough to make it difficult to participate in the study; (15) Active infection or fever of 38°C or higher (except for acute upper respiratory tract infection or localized skin infection); (16) Active hepatitis B or C. Defined as HBsAg positive at screening. Defined as HCV Ab positive at screening; (17) Positive HIV antigen-antibody combo test result

Those taking the following drugs at screening or are expected to take the drugs by the completion of colonoscopy (Day 2, Visit 2): (1) Those with constipation who regularly use laxatives or gastrointestinal motility stimulants within 12 weeks before screening (e.g., more than 2 to 3 times per week); (2) Administration of laxatives, enemas, simethicone, 5HT4 receptor agonists, iron preparations, and opioids, other than investigational products, within 7 days before investigational product administration (Day 1)

Those hypersensitive to substances in the investigational product

Pregnant or breast-feeding women

Women of childbearing potential and men who are planning a pregnancy or disagree with the use of appropriate methods of contraception during the study. Adequate methods of contraception in this study are as follows: (1) Hormonal contraceptives; (2) Placement of an intrauterine device or system; (3) Sterilization procedure/surgery (e.g., bilateral tubal ligation, vasectomy); (4) Use of male condom combined with either cervical cap or diaphragm containing spermicide; (5) Complete abstinence

Those who participated in another clinical study/medical device study and received/used another investigational drug/device within 4 weeks of screening

Those ineligible for any other reasons as determined by the investigator (e.g., clinically significant coagulation disorder, psychiatric illness, dementia, history of drug or alcohol abuse, or inability to take an investigational product orally)

Supplementary Table 3 Chemical composition of investigational product

	DWJ1609			**Oral sulfate tablet**		
	One tablet	**One dose**	**One preparation**	**One tablet**	**One dose**	**One preparation**
Magnesium sulfate	108.00 mg	1.08 g	2.16 g	102.86 mg	1.44 g	2.88 g
Potassium sulfate	211.13 mg	2.1113 g	4.2226 g	201.07 mg	2.81 g	5.63 g
Sodium sulfate	1177.5 mg	11.775 g	23.55 g	1,125 mg	15.75 g	31.5 g
Simethicone	16 mg	160 mg	320 mg	11.43 mg	160 mg	320 mg
Sodium Picosulfate	1 mg	10 mg	20 mg	-	-	-

Supplementary Table 4 Harefield cleansing scale scores for each of the five segments

	By independent central readers			**By investigators**		
	DWJ1609 group (*n* = 99)	**OST group (*n* = 101)**	***P*-value**	**DWJ1609 group (*n* = 99)**	**OST group (*n* = 101)**	***P*-value**
Ascending colon	2.8 ± 0.56	2.9 ± 0.43	0.224(*w*)	3.0 ± 0.74	2.9 ± 0.72	0.460 (*w*)
Transverse	2.9 ± 0.50	3.1 ± 0.38	0.001(*w*)	3.4 ± 0.74	3.2 ±	0.107

colon					0.74		(*w*)
Descending colon	2.9 ± 0.49	3.0 ± 0.40	0.167(*w*)	3.1 ± 0.67	3.0 0.63	±	0.624 (*w*)
Sigmoid colon	2.9 ± 0.60	3.0 ± 0.48	0.825(*w*)	3.3 ± 0.79	3.2 0.65	±	0.613 (*w*)
Rectum	2.9 ± 0.60	3.0 ± 0.57	0.311(*w*)	3.2 ± 0.73	3.3 0.63	±	0.229 (*w*)

Testing for between-group differences in continuous variables after normality assessment [two-sample *t*-test (*t*) or Wilcoxon rank-sum test (*w*)].

Supplementary Table 5 Proportion of participants with residual air bubbles, *n* (%)

	DWJ1609 group (*n* = 99)		**Oral sulfate tablet group (*n* = 101)**	
Residual air bubble	Present	Absent	Present	Absent
Whole colon	0 (0)	99 (0)	0 (0)	101 (100)
Ascending colon	0 (0)	99 (0)	0 (0)	101 (100)
Transverse colon	0 (0)	99 (0)	0 (0)	101 (100)
Descending colon	0 (0)	99 (0)	0 (0)	101 (100)
Sigmoid colon	0 (0)	99 (0)	0 (0)	101 (100)
Rectum	0 (0)	99 (0)	0 (0)	101 (100)

Supplementary Table 6 Major endoscopic outcomes, *n* (%)/mean ± SD

	DWJ1609 group (*n* = 99)	**Oral sulfate tablet group (*n* = 101)**	***P*-value**
Cecal intubation rate	99 (100)	101 (100)	N/A
Insertion time (min)	4.04 ± 2.42	4.25 ± 2.34	0.407 (*w*)[1]
Withdrawal time (min)	8.18 ± 3.39	8.21 ± 3.09	0.889 (*w*)[1]
Polyp detection rate	40 (40.40)	40 (39.60)	0.908 (χ^2)[2]
Adenoma detection rate	14 (14.14)	14 (13.86)	0.955 (χ^2)[2]

[1]Testing for between-group differences in continuous variables after normality

assessment [two-sample *t*-test (*t*) or Wilcoxon rank-sum test (*w*)].

[2]Testing for between-group differences in categorical variables [χ^2 test or Fisher's exact test (*f*), depending on expected cell counts].

Supplementary Table 7 Tolerability, acceptability, and compliance of the DWJ1609 and oral sulfate tablet groups, *n* (%)/mean ± SD

	DWJ1609 group (*n* = 99)	**Oral sulfate tablet group (*n* = 101)**	***P*-value**
Tolerability	1.9 ± 0.83	2.2 ± 0.82	0.040 (*w*)[1]
1 (very easy)	35 (35.35)	23 (22.77)	0.050 (χ^2)[2]
2 (easy)	37 (37.38)	40 (39.61)	
3 (tolerable)	25 (25.25)	35 (34.65)	
4 (difficult)	2 (2.02)	3 (2.97)	
5 (very difficult)	0 (0.00)	0 (0.00)	
Taste	1.4 ± 0.50	1.5 ± 0.56	0.302 (*w*)[1]
Willing to repeat same preparation	94 (94.95)	94 (93.07)	0.579 (χ^2)[2]

[1]Testing for between-group differences in continuous variables after normality assessment [two-sample *t*-test (*t*) or Wilcoxon rank-sum test (*w*)].

[2]Testing for between-group differences in categorical variables [chi-square test (χ^2) or Fisher's exact test (*f*), depending on expected cell counts].