

Chronic colitis induced by dextran sodium sulfate (DSS)

A MODEL OF INFLAMMATORY BOWEL DISEASE (IBD)

Model

Inflammatory bowel disease (IBD) includes ulcerative colitis (UC) and Crohn's disease, two chronic inflammatory disorders of the gastrointestinal (GI) tract. UC is limited to the colon and involves diffuse mucosal inflammation, while Crohn's disease may affect any part of the GI tract and is characterized by transmural inflammation. Clinically, IBD is characterized by weight loss, severe diarrhea, bleeding and abdominal pain.

The dextran sodium sulfate (DSS) model is well established and one of the most widely used for IBD. Multiple cycles of DSS in drinking water induces chronic colitis.

Specie

Mouse

Interest

- DSS-induced colitis is a reproducible model that morphologically and symptomatically resembles human IBD.
- Disease Activity Index (DAI) can be carried out daily throughout 5 weeks allowing real-time and repeated monitoring of animal response over time.
- This model is validated by clinically relevant compounds: 5-ASA (5-aminosalicylic acid) and Remicade.
- This model of DSS-induced chronic colitis is a relevant preclinical model to test therapeutic approaches for the treatment of IBD.

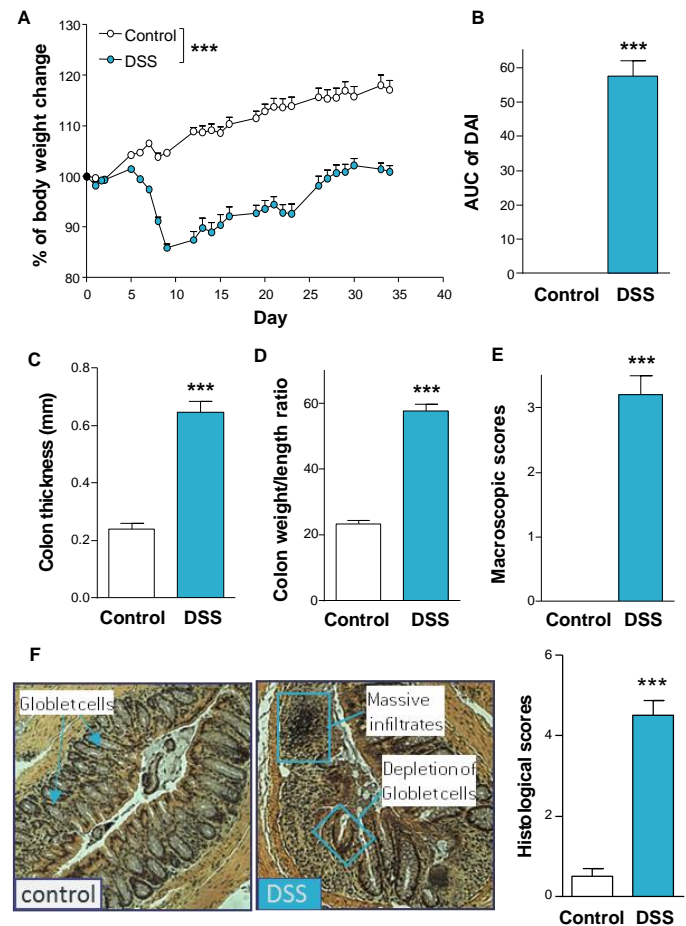
Model Description

- Mice received DSS through drinking water for 7 days, followed by water for 7 days for 3 cycles. Mice are evaluated twice a week for body weight, evidence of bloody stool and diarrhea.
- On week 5, mice are sacrificed and colon are dissected for macroscopic evaluation of inflammation.
- Tested compounds can be administered *via* various routes (i.v., i.p., s.c., p.o., intracolonic).

Parameters evaluated

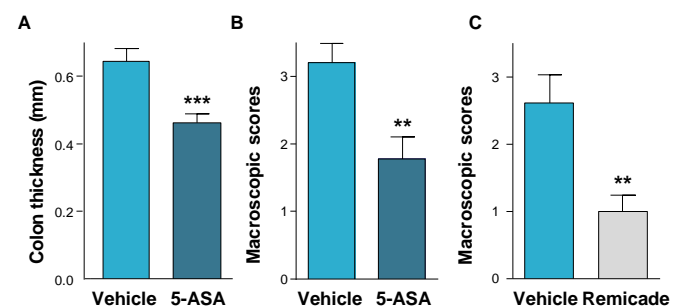
- % body weight loss
- Macroscopic score in colon (clinical scoring)
- DAI: fecal consistency and occult blood test
- Colon weight, length and thickness
- Histological change and mediator dosage in colon

Repeated cycles of DSS induces chronic colitis



Effect of repeated cycles of DSS on body weight [A], AUC of DAI [B], colon thickness [C] and weight/length ratio [D] and colonic macroscopic scores [E] in C57BL/6 mice. [F] Representative hematoxylin and eosin staining of colon from control- and DSS treated mice at D31 (magnification X10).
*** $P < 0.001$, (n=8-19/group)

5-ASA (50 mg/kg, p.o.) and Remicade (10 mg/kg, i.p.) decrease DSS-induced chronic colitis



5-ASA decreases DSS-induced colon thickness [A] and macroscopic scores [B] increase. Remicade decreases DSS-induced macroscopic scores increase [C].

** $P < 0.01$, *** $P < 0.001$, (n=14-19/group)