

# Acute 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 tract. UC is limited to the colon and involves diffuse mucosal inflammation, while Crohn's disease may affect any part of the gastrointestinal tract and is characterized by patchy, transmural inflammation. Clinically, IBD is characterized by weight loss, severe diarrhea, bleeding and abdominal pain. Dextran sodium sulfate (DSS) causes erosions with complete loss of surface epithelium. The DSS model is well established and one of the most widely used for IBD.

## Specie

Mouse

## Interest

- DSS-induced colitis is a reproducible model that morphologically and symptomatically resembles human IBD.
- Disease Activity Index (DAI) is carried out daily throughout 6 days allowing real-time and repeated monitoring of animal response over time.
- This model is validated by the clinically relevant compound (5-ASA) 5-aminosalicylic acid.
- This model of DSS-induced colitis is a rapid and relevant preclinical model to test therapeutic approaches for the treatment of IBD.

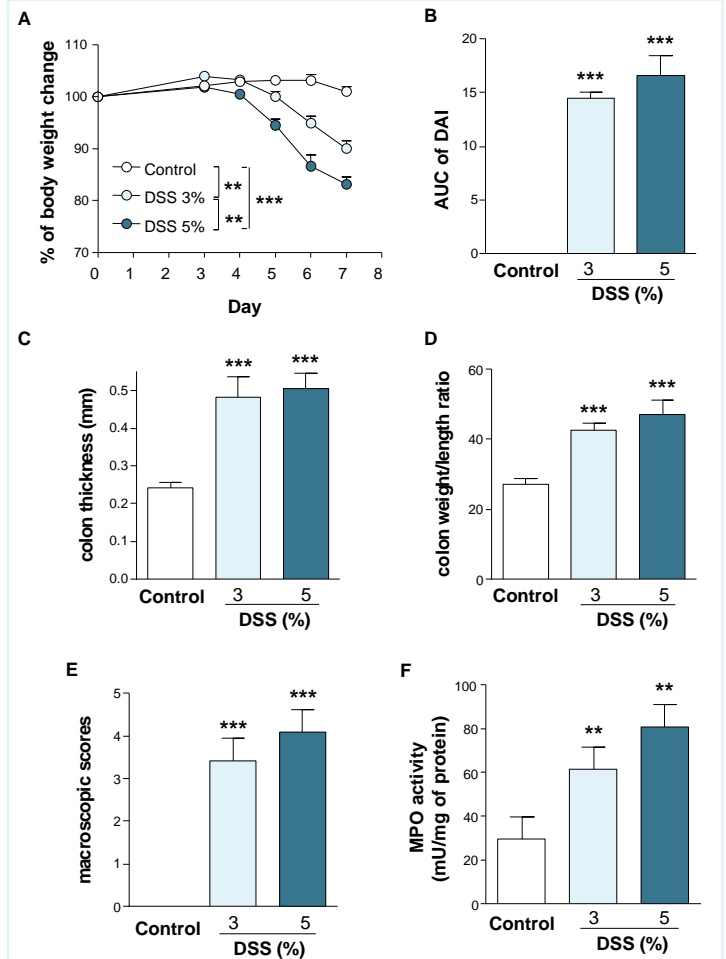
## Model Description

- Mice receive DSS through drinking water for 6 days and are evaluated daily for body weight, evidence of bloody stool and diarrhea.
- On day 7, mice are sacrificed and colon are dissected for macroscopic evaluation of inflammation.
- Colon can be collected for histological, molecular or biomarkers analysis.
- 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)
- Area under the curve (AUC) of DAI: fecal consistency and occult blood test
- Colon weight, length and thickness
- Histological change in colon
- Mediators dosage (ELISA, multiplex assays)

### Characterization of DSS dose-response in C57BL/6 mice

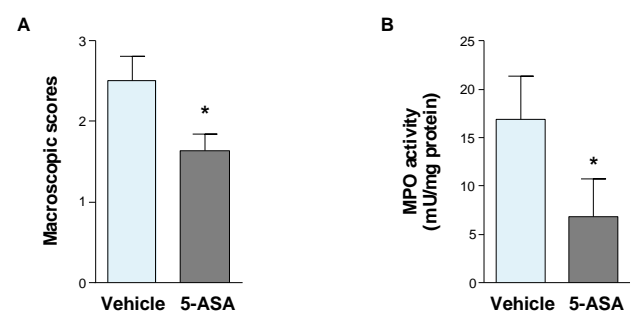


Effects of 3 and 5% DSS on body weight (A), DAI (B), colon thickness (C) and weight /length ratio (D), colonic macroscopic scores (E) and MPO activity (F).

\*\* P<0.01, \*\*\* P<0.001, (n=10-12/group)

DSS at 3 or 5% significantly increases all clinical signs of colitis including body weight loss, bloody diarrhea, colonic inflammation...

### 5-ASA (100 mg/kg, p.o.) decreases DSS 3%-induced acute colitis



\* P< 0.05, (n=10-12/group)