

# CRO services for Inflammatory Bowel Disease

**Inflammatory Bowel Disease**, which includes ulcerative colitis (UC) and Crohn's disease (CD), is a chronic and frequently disabling inflammatory disorder of the intestine. The incidence and prevalence of IBD are increasing with time and in different regions around the world. Despite increasing therapeutic options available for disease management, current IBD therapies have limitations with regards to safety, efficacy, and applicability. The majority of current IBD therapies are associated with severe side effects. For instance, anti-TNF- $\alpha$  treatment, which is standard therapy for CD, have been demonstrated to be associated with fatal blood disorders, infections, liver injury.

**Dextran sulfate sodium (DSS)**-induced colitis is the most established disease model for IBD and widely used to investigate the efficacy and mechanism of therapeutic candidates for IBD. Depending on the duration, and frequency of DSS administration, the animals may develop acute or chronic colitis.

**SMC**, a Tokyo-based biotech company also known as the leading nonclinical CRO for nonalcoholic steatohepatitis (NASH), has re-validated murine DSS-induced colitis as a model translating nonclinical program into clinical practice. Our expertise in inflammation and fibrosis is now experienced in IBD R&D.

## SMC's services in DSS-induced colitis model

### Animal:

- Female C57BL/6J (8- to 10-week-old)

### DSS-administration:

- Acute colitis: Drinking water supplemented with 2.5% DSS *ad libitum* for 5 days.
- Chronic colitis: Drinking water supplemented with 2.5% DSS for 5 days and then pure water *ad libitum* for 14 days.

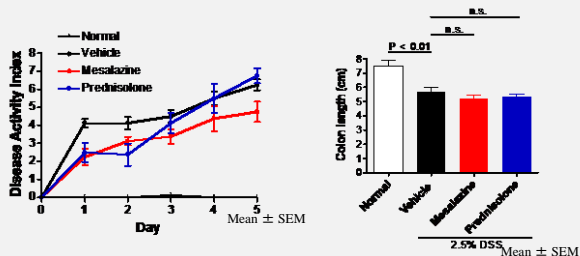
### Major endpoints:

- Disease activity index (DAI), which is the combined score of weight loss, stool consistency and bleeding
- Histology on colon tissue

### Additional endpoints:

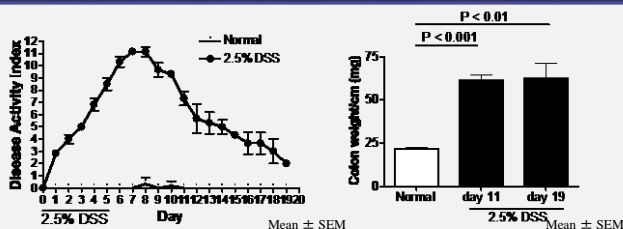
- Colon length and weight
- Cytokine ELISA in serum
- Collagen or hydroxyproline content
- Endoscopic analysis

## Acute DSS colitis model



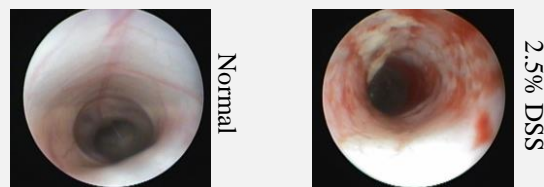
Mice treated with DSS showed a significant increase in DAI and shortening of the colon compared to normal mice. Treatment with Mesalazine lowers DAI compared to Vehicle.

## Chronic DSS colitis model



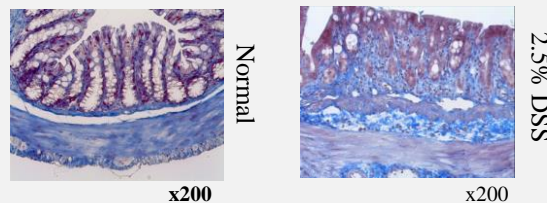
Change of clinical symptoms shown by DAI of mice in DSS-induced chronic colitis. Colon weight increased with time.

## Chronic DSS colitis model



Endoscopic picture of a normal colon and DSS-induced chronic colitis at day 6

## Chronic DSS colitis model



Masson trichrome staining shows accumulation of collagen in mucosal and submucosal layers in DSS-induced chronic colitis at day 19



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