



DSS Induced Colitis in Mice

Model Description

Animal models of intestinal inflammation are important for understanding of the pathogenesis of Crohn disease (CD) and ulcerative colitis (UC), the two major forms of chronic inflammatory bowel disease (IBD). In the dextran sodium sulfate (DSS) colitis, mice are subjected to DSS in drinking water which are toxic to colonic epithelial cells of the basal crypts. Feeding susceptible mice with DSS in drinking water induces an acute colitis with bloody diarrhea, ulcerations and infiltrating granulocytes. The mechanism by which DSS induces intestinal inflammation is unclear but presumably the damage of the epithelial monolayer lining the large intestine is allowing pro-inflammatory intestinal content into the underlying tissue. This model is useful to study the innate immune mechanisms of colitis, while B and T-cells are not playing a major part. Repeated DSS administration for several cycles results in chronic colitis. The model is very popular in IBD research due to its rapidity, simplicity, reproducibility and controllability.



DSS induced colitis in mice

DSS induced colitis involves the innate immune system in development of intestinal inflammation. It is a highly reproducible model that upon repeated DSS administration can progress into a chronic relapsing disease.

Strain	C57BL/6 (or alternative)
Induction	DSS in drinking water
Duration	7-50 days
Onset	2-3 days
Readouts	Stool consistency, body weight, colon weight
Optional readouts	Histology (tissue damage, cellular infiltration)
Immunology	Flow cytometry, cytokines, cell composition
Histology	IHC or joint morphology
Additional	Upon request

Characteristics

Onset of colitis is observed after around two to three days after supplementing drinking water with DSS. Disease is progressing to a chronic relapsing-remitting disease course upon repeated DSS administration cycles. Disease development involves diarrhea, bloody stool and damage of the epithelial layer of the intestine. The model is relatively insensitive to environmental changes and highly reproducible.

Disease is evaluated by macroscopic scoring of stool, body weight and histological evaluation of intestine. Blood can be sampled during the experiment to follow disease progression. Samples for histology are collected at the end of the experiment.

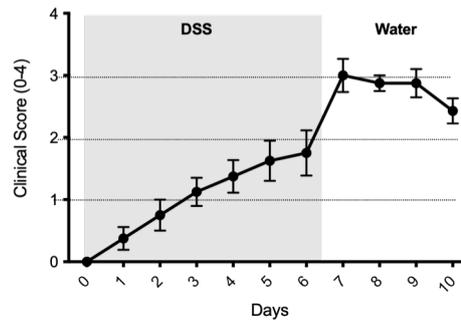


Figure 1. Acute DSS induced colitis in mice. DSS was added to drinking water day 0 to 7 and stool was evaluated as clinical score (n=8).

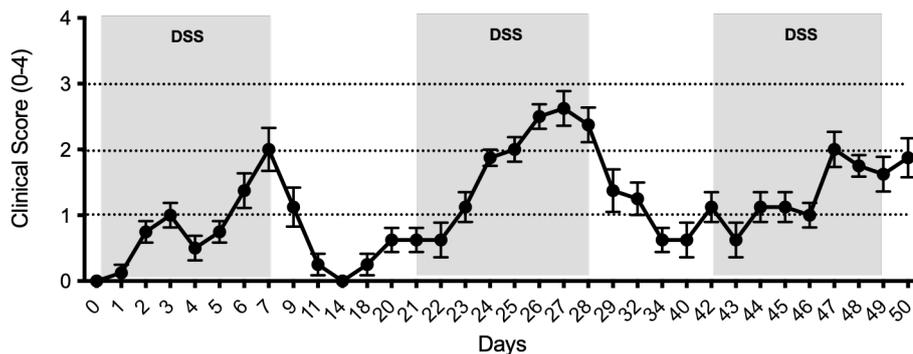


Figure 2. Chronic DSS induced colitis. DSS was added to drinking water in cycles with recovery periods in between for a relapsing chronic disease (n=8).



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Read more:

Chemically induced mouse models of intestinal inflammation. Wirtz et al. Nature Protocols (2007)
Dextran Sulfate Sodium (DSS)-Induced Colitis in Mice. Chassaing et al. Curr Protoc Immunol (2015)
Adequate Dextran Sodium Sulfate-induced Colitis Model in Mice and Effective Outcome Measurement Method. Han Park et al. J Cancer Prevention (2015)
Dextran Sodium Sulphate Colitis Mouse Model: Traps and Tricks. Perse et al. J of Biomedicine and Biotechnology (2012)