**AIM:** To investigate the preventive effect of kefir on colitis induced with dextran sulfate sodium (DSS) in rats.

**METHODS:** Twenty-four male Wistar-albino rats were randomized into four groups: normal control, kefir-control, colitis, and kefir-colitis groups. Rats in the normal and kefir-control groups were administered tap water as drinking water for 14 d. Rats in the colitis and kefir-colitis groups were administered a 3% DSS solution as drinking water for 8-14 d to induce colitis. Rats in the kefir-control and kefir-colitis groups were administered 5 mL kefir once a day for 14 d while rats in the normal control and colitis group were administered an identical volume of the placebo (skim milk) using an orogastric feeding tube. Clinical colitis was evaluated with reference to the disease activity index (DAI), based on daily weight loss, stool consistency, and presence of bleeding in feces. Rats were sacrificed on the 15th day, blood specimens were collected, and colon tissues were rapidly removed. Levels of myeloperoxidase (MPO), tumor necrosis factor (TNF)-α, interleukin (IL) -10, malondialdehyde, and inducible nitric oxide synthase (iNOS) were measured in colon tissue.

**RESULTS:** The DAI was lower in the kefir-colitis group than in the colitis group (on the 3rd and 5th days of colitis induction; $P < 0.01$). The DAI was also significantly higher in the colitis group between days 2 and 6 of colitis induction when compared to the normal control and kefir-control groups. The DAI was statistically higher only on the 6th day in the kefir-colitis group when compared to that in the normal control groups. Increased colon weight and decreased colon length were observed in colitis-induced rats. Mean colon length in the colitis group was significantly shorter than that of the kefir-control group. Kefir treatment significantly decreased histologic colitis scores ($P < 0.05$). MPO activity in the colitis group was significantly higher than in the kefir-control group ($P < 0.05$). Kefir treatment significantly reduced the DSS colitis-induced TNF-α increase ($P < 0.01$). No statistically significant differences were observed among groups for IL-10 and MDA levels. Colon tissue iNOS levels in the colitis group were significantly higher than those in the control and kefir-colitis groups ($P < 0.05$).

**CONCLUSION:** Kefir reduces the clinical DAI and histologic colitis scores in a DSS-induced colitis model, possibly via reduction of MPO, TNF-α, and iNOS levels.