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**Title:**

**Amelioration of dextran sodium sulfate-induced colitis in mice by *Rhodobacter sphaeroides* extract**

**Authors & affiliations:**

**Wen-Sheng Liu<sup>1,2</sup>, Man-Chin Chen<sup>3</sup>, Kuo-Hsun Chiu<sup>4</sup>, Zhi-Hong Wen<sup>2</sup>, Che-Hsin Lee<sup>3,5</sup>**

<sup>1</sup>Department of Marine Biotechnology and Resources, National Sun Yat-sen University, Kaohsiung, Taiwan.

<sup>2</sup>Asia-Pacific Biotech Developing, Inc. Kaohsiung.

<sup>3</sup>Graduate Institute of Basic Medical Science, School of Medicine, China Medical University, Taichung, Taiwan.

<sup>4</sup>Department and Graduate Institute of Aquaculture, National Kaohsiung Marine University, Kaohsiung, Taiwan.

<sup>5</sup>Department of Microbiology, School of Medicine, China Medical University, Taichung, Taiwan.

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Bacteria can produce some compounds to response the environment. These compounds are widely used in cosmetic and pharmaceutical applications. Some probiotics have immunomodulatory activities and modulated the symptoms of diseases. Autoimmune diseases represent a complex group of conditions that are thought to be mediated through the development of autoreactive immunoresponses. Inflammatory bowel disease (IBD) is common autoimmune diseases that affect many individuals worldwide. Previously, we found that the extracts of *Rhodobacter sphaeroides* (Lycogen) inhibited nitric oxide production and inducible nitric-oxide synthase expression in activated macrophage. In this study, the effect of Lycogen, a potent anti-inflammatory agent, was evaluated in mice with dextran sodium sulfate (DSS)-induced colitis. Oral administration of Lycogen reduced the expressions of proinflammatory cytokines (tumor necrosis factor- $\alpha$  and interleukin-1 $\beta$ ) in female BABL/c mice. In addition, the increased number of bacterial flora in the colon induced by DSS was recovered by Lycogen. The histological score of intestinal inflammation in 5% DSS-treated mice with the oral administration of Lycogen was lower than that of control mice. Meanwhile, Lycogen dramatically prolonged the survival of mice with severe colitis. These findings identified that Lycogen as an anti-inflammatory agents with the capacity to ameliorate DSS-induced colitis.