

# **The Potential Chemo Preventive Effect of *Andrographis paniculata* on 1,2-Dimethylhydrazine and High-Fat-Diet-Induced Colorectal Cancer in Sprague Dawley Rats**

## **ABSTRACT**

Colorectal cancer (CRC) is responsible for a notable rise in the overall mortality rate. Obesity is found to be one of the main factors behind CRC development. *Andrographis paniculata* is a herbaceous plant famous for its medicinal properties, particularly in Southeast Asia for its anti-cancer properties. This study examines the chemopreventive impact of *A. paniculata* ethanolic extract (APEE) against a high-fat diet and 1,2-dimethylhydrazine-induced colon cancer in Sprague Dawley rats. Sprague Dawley rats were administered 1,2-dimethylhydrazine (40 mg/kg, i.p. once a week for 10 weeks) and a high-fat diet (HFD) for 20 weeks to induce colorectal cancer. APEE was administered at 125 mg/kg, 250 mg/kg, and 500 mg/kg for 20 weeks. At the end of the experiment, blood serum and organs were collected. DMH/HFD-induced rats had abnormal crypts and more aberrant crypt foci (ACF). APEE at a dose of 500 mg/kg improved the dysplastic state of the colon tissue and caused a 32% reduction in the total ACF. HFD increased adipocyte cell size, while 500 mg/kg APEE reduced it. HFD and DMH/HFD rats had elevated serum insulin and leptin levels. Moreover, UHPLC-QTOF-MS analysis revealed that APEE was rich in anti-cancer phytochemicals. This finding suggests that APEE has anti-cancer potential against HFD/DMH-induced CRC and anti-adipogenic and anti-obesity properties.