

# Dietary Aloe Vera Gel Powder and Extract Inhibit Azoxymethane- induced Colorectal Aberrant Crypt Foci in Mice Fed a High- fat Diet.

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## RESEARCH ARTICLE

Dietary Aloe Vera Gel Powder and Extract Inhibit Azoxymethaneinduced Colorectal Aberrant Crypt Foci in Mice Fed a Highfat Diet

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### Abstract

Aloe vera gel exhibits protective effects against insulin resistance as well as lipid-lowering and anti-diabetic effects. The anti-diabetic compounds in this gel were identified as Aloe-sterols. Aloe vera gel extract (AVGE) containing Aloe-sterols has recently been produced using a new procedure. We previously reported that AVGE reduced large-sized intestinal polyps in Apc-deficient Min mice fed a high fat diet (HFD), suggesting that Aloe vera gel may protect against colorectal cancer. In the present study, we examined the effects of Aloe vera gel powder (AVGP) and AVGE on azoxymethane-induced colorectal preneoplastic aberrant crypt foci (ACF) in mice fed a HFD. Male C57BL/6J mice were given a normal diet (ND), HFD, HFD containing 0.5% carboxymethyl cellulose solution, which was used as a solvent for AVGE (HFDC), HFD containing 3% or 1% AVGP, and HFDC containing 0.0125% (H-) or 0.00375% (L-) AVGE. The number of ACF was significantly lower in mice given 3% AVGP and H-AVGE than in those given HFD or HFDC alone. Moreover, 3% AVGP, H-AVGE and L-AVGE significantly decreased the mean Ki-67 labeling index, assessed as a measure of cell proliferation in the colonic mucosa. In addition, hepatic phase II enzyme glutathione S-transferase mRNA levels were higher in the H-AVGE

group than in the HFDC group. These results suggest that both AVGP and AVGE may have chemopreventive effects on colorectal carcinogenesis under the HFD condition. Furthermore, the concentration of Aloe-sterols was similar between 3% AVGP and H-AVGE, suggesting that Aloe-sterols were the main active ingredients in this experiment.

**Key Words:** Aloe vera gel extract (AVGE) - Aloe-sterols - aberrant crypt foci (ACF) - high-fat diet (HFD)