

Aloe vera: Could the popular soothing plant have a role in the treatment of colon cancer?

Jayne Phippen-Hunt DO '25¹, Benjamin King DO '26¹, Benjamin Ptasienski², Nathan Eastin², Trent Mayberry², Braydon Cowan², Sarah Matusofsky², Justin Murray², Ellie Monnette², Qian Bai BA², Mark R. Wakefield MD^{2,3}, Yujiang Fang MD, Ph.D^{1,2,3}

¹*Department of Microbiology & Immunology, Des Moines University College of Osteopathic Medicine, West Des Moines, IA*

²*Department of Surgery, University of Missouri School of Medicine, Columbia, MO*

³*Ellis Fischel Cancer Center, University of Missouri School of Medicine, Columbia, MO*

Background: Colon cancer is the most common digestive cancer in the US. Aloe vera has long been used topically to soothe skin burns. In recent years, it has been shown to have anti-tumor effects. However, little is known about its effect on growth of colon cancer. This study was designed to investigate the effect of aloe vera on the survival, proliferation, and apoptosis of colon cancer in an attempt to evaluate the potential of aloe vera as an anti-tumor agent.

Methods: HCT 1116, a commonly used colon cancer cell line, was used and cells were exposed to aloe vera extract (AE). The effects of AE on the survival, proliferation, and apoptosis of the cells were studied using clonogenic survival assays, cell proliferation kit, and caspase-3 activity kits. RT-PCR and IHC were used to further investigate molecular mechanisms.

Results: Colon cancer cell colony count was significantly lower in the presence of AE. This was further supported by a decrease in the optical density value of colon cancer cells in the presence of AE. The relative caspase-3 activity was higher in the presence of AE in colon cancer cells. The anti-proliferative effect of AE on colon cancer cells correlated with lower expression of cyclin B. The pro-apoptotic effect of AE on colon cancer cells correlated with lower expression of survivin.

Conclusions: Aloe vera inhibits growth of colon cancer by downregulation of cyclin B and survivin. Such a study suggests aloe vera may have a role in treatment of colon cancer and warrants further studies.