

The Green Magic Vegetable Spinach Turns on Green for Cervical Cancer Treatment

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Background: Cervical cancer is the most common gynecological cancer worldwide. The dysregulation of CKD4 in the cell cycle is an important factor that leads to the development of cervical cancer. Spinach is a popular vegetable because of its nutritional benefits. Its high glycolipid and antioxidant content have revealed anti-tumor effects on breast and colon cancers. However, its effect on cervical cancer is unknown. This study was designed to investigate the direct effect of spinach on the growth of cervical cancer.

Methods: We utilized clonogenic survival assay, cell proliferation kit, caspase-3 activity kit and TUNEL staining to examine the effect of spinach extract (SE) on proliferation and apoptosis of the widely studied cervical cancer cell line, SiHa. RT-PCR and IHC were used to further investigate possible molecular mechanisms.

Results: The percentage of colonies of SiHa cancer cells significantly decreased after treatment with SE. In addition, a decrease in the OD value of cancer was noticed. The relative caspase-3 activity in SiHa cancer cells also increased significantly after treatment with SE. The anti-proliferative effect of SE on SiHa cancer cells correlated with decreased expression of CDK4. The pro-apoptotic effect of SE on SiHa cancer cells correlated with increased expression of BAX. TUNEL and IHC studies are in progress.

Conclusion: Spinach inhibits growth of cervical cancer via downregulation of CDK4 and upregulation of BAX. Therefore, our study suggests a potential use of SE in cervical cancer treatment. Further studies might provide more insight about the effect of SE on other cancers as well.