Voltage-gated potassium ion channels in colon cancer.

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Source

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Abstract

Voltage-gated potassium channels (VGPCs) have been previously implicated in cellular proliferation. In this study, the expression of VGPCs was examined by immunohistochemistry in seventy-four human colonic carcinoma specimens. Immunostaining for the Kv1.3 type VGPC was absent in two normal human colon specimens. Kv1.3 staining in the 74 colon cancer specimens was low in 9% (7/74), moderate in 61% (45/74) and high in 30% (22/74). Potassium channel (PC) openers, minoxidil and diazoxide (5-50 microg/ml), increased growth of SW1116, LoVo, Colo320DM and LS174t human colon cancer cell lines by 20-40%. PC-blockers, dequalinium and amiodarone, caused marked growth-inhibition of the four cell lines, at concentrations between 1 to 3 microg/ml. PC-blockers such as glibenclamide inhibited cellular proliferation at concentrations above 50 microg/ml while tetraethylammonium and 4-aminopyridine (up to 100 microg/ml) did not have significant growth-suppressive effects. Our results indicate the presence of VGPCs in colon cancer and suggest that PCs could serve as therapeutic targets.

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