Activity of potassium channel-blockers in breast cancer.


Source

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Abstract

BACKGROUND:

Potassium ion (K+) channels are known to play a key role in breast cancer proliferation.

MATERIALS AND METHODS:

We investigated the expression of Kv1.3 voltage-gated K+ channels in 60 human breast cancer specimens by immunohistochemistry. The effects of K+ channel-blockers on cellular proliferation were examined in vitro.

RESULTS:

No immunostaining was observed in 4 normal human breast specimens. Eighteen (30%) breast cancer specimens showed high, 35 (58%) moderate and 7 (12%) low Kv1.3 staining in the epithelial compartment. Minoxidil (K+ channel-opener) stimulated growth of MCF-7 human breast cancer cells (maximal approximately 60% at 10 micrograms/mL). K+ channel-blockers, dequalinium and amiodarone, had marked inhibitory effects on MCF-7 proliferation (> 90% inhibition at 1.5 micrograms/mL). Importantly, amiodarone and dequalinium potentiated the growth-inhibitory effects of tamoxifen on human breast (MCF-7, MDA-MB-231) as well as prostate (PC3, MDA-PCA-2B) and colon (Colo320DM, SW1116) cancer cell lines.
CONCLUSION:

Investigation of combination therapy with tamoxifen and K+ channel-blockers is warranted.

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