Casein kinase 2 (CK2) increases survivin expression via enhanced ?-catenin-T cell factor/lymphoid enhancer binding factor-dependent transcription

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Increased expression of casein kinase 2 (CK2) is associated with hyperproliferation and suppression of apoptosis in cancer. Mutations in the tumor suppressor APC (adenomatous polyposis coli) are frequent in colon cancer and often augment ?-catenin-T cell factor (Tcf)/lymphoid enhancer binding factor (Lef)-dependent transcription of genes such as c-myc and cyclin-D1. CK2 has also been implicated recently in the regulation of ?-catenin stability. To identify mechanisms by which CK2 promotes survival, effects of the specific CK2 inhibitors 4,5,6,7-tetrabromobenzotriazole (TBB) and 2-dimethylamino-4,5,6, 7-tetrabromo-1H-benzimidazole were assessed. TBB and 2-dimethylamino-4,5,6,7- tetrabromo-1H-benzimidazole significantly decreased proliferation and increased apoptosis of HT29(US) colon cancer cells. RT-PCR and immunoblot analysis revealed that both inhibitors decreased survivin mRNA and protein levels in HT29(US) cells. Similar effects were observed with TBB in human DLD-1 and SW-480 colo