Physiological and functional interactions between TCF4 and DAXX in colon cancer cells

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Abstract

Daxx, a human cell death-associated protein, was isolated as a Tcf4-interacting protein, using a yeast two-hybrid screen. Co-immunoprecipitation in HEK-293T cells and yeast two-hybrid screen in Y190 cells were performed to identify the interaction between Tcf4 with Daxx and to map the binding regions of Tcf4. In the nucleus, Daxx reduced DNA binding activity of Tcf4 and repressed Tcf4 transcriptional activity. Overexpression of Daxx altered the expression of genes downstream of Tcf4, including cyclin D1 and Hath-1, and induced G1 phase arrest in colon cancer cells. A reduction in Daxx protein expression was also observed in colon adenocarcinoma tissue when compared with normal colon tissue. This evidence suggests a possible physiological function of Daxx, via interaction with Tcf4, to regulate proliferation and differentiation of colon cells.