The Novel Synthetic TLS-11 Induces G2/M Arrest and Apoptosis in COLO 205 Cells

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TLS-11, a novel synthetic α-carboline derivative, was investigated for its anti-proliferative activity in human colon cancer carcinoma COLO 205 cells. In the present study, COLO 205 cells were treated with TLS-11 to investigate the molecular mechanisms underlying its effects. TLS-11-induced apoptosis was confirmed by the annexin V-FITC/PI double staining. Results from colorimetric assays and Western blot indicated that activities of caspase 3 and caspase 9 were increased in TLS-11-treated COLO 205 cells. Western blot analysis showed that the protein levels of G2/M phase proteins (CDK1, cyclin B1, p53 and p21), intrinsic related proteins (cytochrome c, AIF and Apaf-1 and Endo-G), the ratio of Bax/Bcl-xL and phosphorylated p38 MAPK were increased in COLO 205 cells after TLS-11 treatment. Overall, these results suggest that TLS-11 exerts anti-cancer effects by inducing G2/M arrest and apoptosis via mitochondrial pathway in COLO 205 cells in vitro.