Effects of trichostatin A on FHIT and WWOX genes expression, cell growth inhibition and apoptosis induction in hepatocellular carcinoma WCH 17 cell line

Sanaei Masumeh, Kavoosi Fraidoon, Karami Hossein

Previously, we evaluated the effect of trichostatin A (TSA) on the expression of DNA methyltransferase 1 (DNMT1) in Hepatocellular Carcinoma (HCC). Fragile histidine triad (FHIT) and WW domain-containing oxidoreductase (WWOX) are two of the most common down-regulated genes in many cancers located on chromosome 3p14.2 and 16q23.3-24.1 respectively. The aim of the current study was to assess the effect of TSA on these genes expression, cell growth, and apoptosis in HCC WCH 17 cell. The cells were seeded and treated with TSA at different times. Then, MTT assay, flow cytometry, and qRT-PCR were achieved to determine viability, apoptosis and gene expression respectively. Cell growth was significantly inhibited, 92 to 36% after 24 h, 86 to 28% after 48 h, and 78 to 24% after 72 h. The results of flow cytometry confirmed that TSA increased apoptosis compared to the control group, the apoptosis percentage increased to 12%, 16%, and 18% in comparison to control groups (2%). Significant up-regulation of the genes was observed in all treated groups. We concluded that re-expression of silenced WWOX and FHIT genes could be achieved by TSA resulting in cell growth inhibition and apoptosis induction in WCH 17 cell.

Keywords: Trichostatin A; FHIT; WWOX; Apoptosis; Cancer