Over-expression of the X-linked inhibitor of apoptosis protein (XIAP) delays serum deprivation-induced apoptosis in CHO-K1 cells

Abstract

Serum deprivation inhibits cell growth and initiates apoptosis cell death in mammalian cell cultures. Since apoptosis is a genetically controlled cell death pathway, over-expression of anti-apoptotic proteins may provide a way to delay apoptosis. This study investigated the ability of the X-linked inhibitor of apoptosis protein (XIAP) to inhibit apoptosis induced by serum deprivation. Study includes evaluation of the ability of XIAP to prolong culture period and its effect on cell proliferation in serum-deprived media. The full length human XIAP was introduced into CHO-K1 cell lines and the effects of XIAP over-expression on the inhibition of apoptosis induced by serum-deprived conditions were examined. In batch cultures, cells over-expressing XIAP showed decreased levels of apoptosis and a higher number of viable cell under serum-deprived conditions compared to the control cell lines. The viability of control cells dropped to 40% after 2. days of serum deprivation, the XIAP expressing cells still maintained at a viability higher than 90%. Further investigation revealed that the caspase-3 activity of the CHO-K1 cell line was inhibited as a result of XIAP expression.