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Influence of 2-methoxyestradiol on cell morphology and Cdc2 Kinase activity in WHCO3 esophageal carcinoma cells

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ABSTRACT

The influence of 1×10^{-6} M exogenous 2-methoxyestradiol (2ME) was investigated on nuclear and cytoplasmic morphology, as well as Cdc (cell division cycle) 2 kinase activity in WHCO3 esophageal carcinoma cells. Mitotic indices after 18 h of 2ME exposure revealed an increase in metaphase cells (9.0%) when compared to the vehicle-treated cells (0.9%). 2ME-treated cells showed apoptotic cells at 5.6% after 18 h of exposure to dimethyl sulphoxide, compared to 0.9% in vehicle-treated cells. Increased morphological characteristics of apoptosis were observed in 2ME-treated cells after 21.5 h of exposure. Twelve percent of cells were in apoptosis when compared to the 1.6% of vehicle-treated cells. Furthermore, 42.4% of cells were arrested in metaphase after 21.5 h of 2ME exposure compared to 2.9% of vehicle-control cells present in metaphase. Cdc2 kinase activity was statistically significantly increased (1.7-fold) (P ‹ 0.005) after 18 h of 2ME exposure when compared to vehicle-treated controls. Although the mechanism of 2ME's action on esophageal carcinoma cells is not yet elucidated, the present study revealed that 2ME caused metaphase arrest, as well as an increase in Cdc2 kinase activity that culminated in the induction of apoptosis in these cells.

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