The apoptosis induced by nucleosides in the human hepatoma Hep G2

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Abstract

AIM: To investigate the apoptotic effects of nucleosides on the human hepatoma HepG2.

METHODS: The nucleosides included inosine (I), cytidine (C), uridine (U), thymidine (T), adenosine (A), and guanosine (G). Cells were incubated by the mediums with or without nucleosides at 37 ℃ in a 50 mL/L CO2 humidified atmosphere.

RESULTS: It was found that the cell viabilities were significantly decreased, when cells were treated with 30 mmol/L I, 30 mmol/L C, 30 mmol/L U, 30 mmol/L T, 0.5 mmol/L A, and 0.5 mmol/L G after 12 h incubation ($P<0.05$). About the apoptotic phenomenon, the cell percentages of sub-G1 cells were significantly increased in the mediums containing nucleosides such as C, U, T, A, and G ($P<0.05$). Furthermore, the caspase-3 activity was increased, when the cells were incubated with T
($P<0.05$). The protein expressions of p53 and p21 showed no difference in each group. To investigate the mechanism of apoptosis induced by nucleosides, it was found that the contents of soluble Fas ligand contents were increased in HepG2 cells following I, U, T, and A treatment ($P<0.05$). But, TNF-a and cytochrome c were undetectable.

CONCLUSION: Thymidine may induce the apoptosis in HepG2, but the effective dosages and reactive time must be investigated in the future study. However, the apoptosis-inducing abilities of other nucleosides were still unclear in this study.