Melatonina: eficaz no hepatoma e hepatocarcinoma

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BACKGROUND: Melatonin has been suggested to have antiproliferative effects on cancer cells. These effects can be attributed to immunomodulation, growth factor inhibition, induction of apoptosis and prooxidant properties. Melatonin is considered as a safe drug with minimal adverse effects. OBJECTIVES: We planned to investigate the effects of melatonin in hepatoma (Hep G2) cell line. In this study, different concentrations of melatonin were studied to assess its effects on human hepatoma (Hep G2) cell line in vitro. METHODS: In this study, different doses (5 x 10(-5) M, 5 x 10(-4) M, 10(-3) M) of melatonin were administered into hepatocellular carcinoma cell line in vitro. After an incubation period of 72 hours, the studied and control groups were evaluated for cell cycle, morphology, proliferating index and apoptosis percentage. RESULTS: A significant decrease in percentage of phase G0/G1 cells was found in high-dose melatonin group (10(-3) M) compared to control group. Melatonin increased the cell counts in S phase of cell cycle at high doses as well. However, phase G2/M cell percentage did not change with the administration of melatonin. Cell proliferation was increased in all melatonin groups, but the only statistically significant difference was found between the high-dose and control groups. There was a significant increase in proliferative index between the control group and high-dose melatonin group. CONCLUSION: High dose of melatonin increases the cell count in S phase and shows a proapoptotic effect on hepatoma cells. This indicates that melatonin can be considered a promising drug when used along with other antineoplastic agents for the treatment of hepatoma.

Melatonin induces cell cycle arrest and apoptosis in hepatocarcinoma HepG2 cell line.

Martin-Renedo J, Mauriz JL, Jorquera F, Ruiz-Andrés O, González P, González-Gallego J. Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas, Institute of Biomedicine, University of León, León, Spain. jgonga@unileon.es

Melatonin reduces proliferation in many different cancer cell lines. However, studies on the oncostatic effects of melatonin in the treatment of hepatocarcinoma are limited. In this study, we examined the effect of melatonin administration on HepG2 human hepatocarcinoma cells, analyzing cell cycle arrest, apoptosis and mitogen-activated protein kinase (MAPK) signalling pathways. Melatonin was dissolved in the cell culture media in 0.2% dimethyl sulfoxide and administered at different concentrations for 2, 4, 6, 8 and 10 days. Melatonin treatment increased phase G0-G1, and phase G2/M percentage was decreased in all melatonin groups compared to control group. Melatonin increased the cell counts in S phase of cell cycle at high doses as well. However, phase G2/M cell percentage did not change with the administration of melatonin. Cell proliferation was increased in all melatonin groups, but the only statistically significant difference was found between the high-dose and control groups. There was a significant increase in proliferative index between the control group and high-dose melatonin group. CONCLUSION: High dose of melatonin increases the cell count in S phase and shows a proapoptotic effect on hepatoma cells. This indicates that melatonin could be considered a promising drug when used along with other antineoplastic agents for the treatment of hepatoma.

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Inhibitory effect of melatonin on the growth of H22 hepatocarcinoma cells by inducing apoptosis.

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Whether melatonin not only inhibits the growth of H22 hepatocarcinoma cells but also induces apoptosis in vitro was assessed. The anti-proliferative effects of melatonin on tumor cells was observed by MTT assay and tumor cells growth curve assay. And the anti-proliferative effect of melatonin altered the percentage or cells in G0/G1 and G2/M phases indicating cell cycle arrest in the G2/M phase. The reduced cell proliferation and alterations of cell cycle were coincident with a significant increase in the expression of p53 and p21 proteins. These novel findings show that melatonin, by inducing cell death and cell cycle arrest, might be useful as adjuvant in hepatocarcinoma therapy.

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