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The Effects of Melatonin on Caspase-3 and Antioxidant Enzymes Activity in Rats Exposed to Anticancer Drug



Abstract

This study aimed to investigate the effects of Melatonin at (10mg/kg) on programmed cell death (apoptosis) by measurements of Caspase -3 activity and antioxidant enzymes GSH, CAT, MDA, and Peroxynitrate activity on rats exposed to anticancer drugs Gemcitabine. Sixty-four adult male albino rats were used in this study ,weighing (250-350)gm with a temperature of $22\pm 20^{\circ}\text{C}$, The animals were feeding and drinking water *ad libitum*. the animals were divided into 5 main groups as follows: Group A(Control group n=8): given daily D.W. Group B (melatonin group n=8): given a daily melatonin 10mg/kg/orally. Group C (Gemcitabine n=16) this group was divided into two groups according to Gemcitabine dose (25 and 50 mg/kg). Group D (protective group n=16): this group was divided into two groups according to Gemcitabine dose (25 and 50 mg/kg) together with given daily melatonin in dose (10mg /kg) orally. Group E (protective and treatment group n=16): this group was divided into two groups according to Gemcitabine dose (25 and 50 mg/kg). This group was given daily melatonin in dose (10mg /kg) orally as a treatment. The results showed that melatonin reduced the activity of Caspase-3 enzyme (Apoptosis marker), MDA, and peroxynitrate , induced by chemotherapy drugs, While increased the activity of antioxidant enzyme GSH and CAT. Melatonin given a protective effect on liver and kidney tissues from damage that happened by Gemcitabine at two different doses (25,50 mg/kg).