Effects of Melatonin on Pro-Apoptotic Genes And Proteins Expression of Adult Rat Uterus

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Background: Melatonin is the main product released from the pineal gland of many species of vertebrates with an important role in regulating the neuroendocrine system, controlling the circadian rhythm of physiological processes, sleep/wake cycle, blood pressure, immune response and apoptosis, as well as the reproductive system function. Aims: To analyze the effects of melatonin on apoptosis in the rat uterus submitted to continuous light. Methods: 20 virgin adult rats (\textit{Rattus norvegicus}, Wistar) with regular estrous cycle were divided into two groups: GContr, control that received vehicle and GExp treated with melatonin (0.4 ug/ml). All animals were submitted to continuous light for 90 days when they were euthanized and the uterus removed and processed for immunohistochemical techniques and molecular biology (qPCR). Also, we performed immunohistochemical analysis of protein involved in apoptosis. These results were evaluated by Student's t test with a level of rejection of the null hypothesis set at 5% (p <0.05). The results of qPCR were analyzed by specific software SAbiosciences and expressed as fold change. Results: In the animals of GExp there was predominance of many pro-apoptotic gene overexpression that are involved in both extrinsic and intrinsic when compared to GContr ones. However, the protein expression of Bax, Fas, FasL and cleaved caspase-3 of GContr was similar to GExp. Conclusion: Our data suggest that melatonin may increase the expression of pro-apoptotic genes without changes in proteins involved in apoptosis.

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Keywords: rat; uterus; melatonin; apoptosis; qPCR; immunohistochemistry