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Melatonin in Serum and the Pineal of Spontaneously Hypertensive Rats

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Involvement of melatonin in the blood pressure regulation as an endogenous central hypotensive factor has been suggested in rats and in man. We studied the relationship between melatonin and the development of hypertension in 5- and 15-week-old spontaneously hypertensive (SHR) and normotensive Wistar Kyoto (WKY) rats, by measuring serum and the pineal concentrations with a sensitive and specific radioimmunoassay coupled with a novel extraction method. Serum melatonin concentration at midnight in young SHR rats was significantly higher than that in age-matched WKY rats ($p < 0.01$), whereas it was decreased in the adult SHR ($p < 0.01$). No such differences were observed at noon. Pineal content of melatonin at midnight in 5-week-old SHR rats was lower than in age-matched WKY rats ($p < 0.01$). These data demonstrate that melatonin in the nocturnal serum of SHR rats is elevated at prehypertensive stage while it is decreased after the development of hypertension. The role of melatonin in the hypertensive process in SHR rats requires further study.

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