Thesis Title Effects of melatonin on accessory sex glands in testosterone-treated, orchidectomized rats

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ABSTRACT

Melatonin has been shown to directly affect gross and microscopic features of rat ventral prostate. The purpose of this study is to further elucidate its direct action on rat seminal vesicle, ventral prostate, dorsolateral prostate, and coagulating gland; in terms of tissue weights and their citric acid and fructose contents. Rats were divided into sham-orchidectomized (SO), orchidectomized (O), testosterone-treated orchidectomized (OT), and combined melatonin, testosterone-treated, orchidectomized groups. The last group was further divided into the 50 µg melatonin-treated group (OTM50) and the 400 µg melatonin-treated group (OTM400). After 4 weeks of treatments, the rats were decapitated; sera were collected for testosterone radioimmunoassay; the organs were removed, weighed, and biochemically assayed. The organ weights, citric acid contents, fructose contents, and testosterone concentrations did not differ in the OT, OTM50 and OTM400 animals.

Attempts to correlate between the weights of the organs and serum testosterone levels revealed that no such correlation existed in the OT animals. Whereas the negative correlation was found between the weights of coagulating gland, as well as the dorsolateral prostate, and serum testosterone levels in the melatonin-treated animals. Negative correlation was also found between citric acid concentration in the ventral prostate of the OTM50 animals and their serum testosterone levels. These results suggest that melatonin has a limitted direct action on rat accessory sex organs; it does not produce dramatic changes in weights and biochemistry but rather modifies the effects of testosterone on these organs.