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## Pinealectomy and Exogenous Melatonin Regulate Anxiety-Like and Depressive-Like Behaviors in Male and Female Wistar Rats

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### ABSTRACT

The main objective of this work was to 1) study the influence of endogenous melatonin (Mel) abolishment via pinealectomy and 2) explore exogenous Mel effect on anxiety-like and depressive-like behavior in male and female rats. Rats were shamoperated (Sh) or pinealectomized (Px) and following subgroups were selected 1) Px/NaCl (0.9%) and Sh/NaCl (0.9%) : rats injected subcutaneously, once daily for 8 weeks, with saline solution NaCl (0.9%) as vehicle; 2) Px/Mel (4 mg/Kg) and Sh/Mel (4 mg/Kg): Rats similarly injected with 4 mg/Kg of Mel. All animals were housed under a photoperiod of (LD:16/8). After different treatments animals were tested in the open-field test (OFT), elevated plus maze test (EPM) to determine anxiety-like behavior, and forced swimming test (FST) to evaluate depressive-like level. Our results revealed that level of anxiety-like and depressive-like behavior are significantly higher in Px/NaCl (0.9%) when compared to Sh/NaCl (0.9%) group, suggesting that pinealectomy induced an anxiogenic and depressant effects. The Px effects would be due to the absence of endogenous Mel synthesis and release. Additionally, we clearly demonstrated that the level of anxiety-like and depressive-like behavior are higher in Px/Mel (4 mg/Kg) and Sh/Mel when compared respectively to Px/NaCl (4 mg/Kg) and Sh/NaCl groups suggesting an anxiolytic and antidepressant effects of exogenous Mel. Behavioral responses were sex dependent since the difference between females and males, especially, after melatonin administration, were statistically significant. These experiments provide evidence that pinealectomy and Mel regulated emotionally behavior in male and female rats.

### KEYWORDS

Pinealectomy; Melatonin; Sex Dependent; Anxiety; Depression; Behavioral Tests

### Cite this paper

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