

## Histological effects of melatonin on male rat's alveolar macrophages

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### **Abstract**

**Background:** Melatonin is a neuro-hormone of the pineal gland. It increases and enhances immunity, whether in animals or human. The mononuclear – phagocyte system; is a single functional immune unit. The pulmonary alveolar macrophages are one of the most important members included within this immune unit.

**Objective:** This work tried to study the effect of different doses of dietary melatonin on adult rat's pulmonary alveolar macrophages.

**Methods:** Melatonin was supplied to adult rats, for successive 30 days. Rats were divided into 6 groups. Group I was the control. Group II, III, IV, V and VI were given a daily dose of melatonin as 125, 250, 500, 750 and 1000 µg / kg body weight, respectively. After the last day of treatment, the left lung of the rat was removed under anesthesia for histological study.

**Results:** The results showed significant beneficial effects on pulmonary alveolar macrophages by normal therapeutic dosages, whereas with further stepping up doses, significant damaging effects were seen.

**Conclusion:** Dietary melatonin had good effects on the rat's pulmonary alveolar macrophages within therapeutic doses, whereas it had highly damaging changes in overabundance.

**Key words:** Melatonin, immunity, and alveolar macrophages.

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### **Introduction**

Melatonin is a neuro-hormone of the pineal gland, secreted mostly at night time<sup>(1)</sup>. It increases and enhances both cellular and humoral immunity, whether in animals or human<sup>(2, 3)</sup>. The mononuclear – phagocyte system; is a single functional unit of immunological system, consists of bone marrow precursors (monoblasts and promonocytes), circulating monocytes and tissue macrophages, both free and fixed (histiocytes).

Thus as one member of the immune system; macrophages are affected and activated by melatonin effect<sup>(1, 2, 3)</sup>. The pulmonary alveolar macrophages are one of the most important members included within this immune unit<sup>(4, 5)</sup>. It would be of great interest to study the effect of dietary melatonin on these alveolar macrophages.

### **Materials and methods**

Forty eight Adult male Wister albino rats were used in this work. They were kept in an animal room, with a temperature of 22±2C°, the light - dark cycle was 12:12. Water was offered *ad libitum*. They fed a control diet with free access to food, except for one and half hour prior to melatonin containing meal. Dietary melatonin was provided as a single daily dose, 2 hours prior to sunset.

Animals were divided into 6 groups, each consisting of 8 rats. Group I was the control: rats were provided with the same

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