Influence of Melatonin in the Treatment of Experimental Enterobius Vermicularis Infection

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Abstract

This study aims to realization the conceivable therapeutic of melatonin effects experimental against *Enterobius vermicularis* in rats. Implement this experiment during the period from August 2019 to January 2020. *E.vermicularis* infected with male wistar rats orally with dose 15mg/kg melatonin former of body weight for 30 day showed significantly reduction in the number of eggs and worms compared with rats orally with dose 15mg/kg melatonin accompanying and untreated rats for 30 day ($P < 0.05$).Histologically in intestine examined show increase numbers of leucocytes produce, necrosis significant scatter and reduction this parasite of tissue in rats treated with melatonin. This results show influence of melatonin in the control on *Enterobiosis* and suggestion that this drug usefulness in *Enterobius vermicularis* infection therapy.

Keyword: *Eggs, Worms, Enterobius vermicularis, Melatonin, Former.*

Introduction

Enterobius vermicularis is helminthes more common human parasitic Nematoda infected the bowel but the children worldwide may reach to 40 million infestations in USA and Europe especially school students [(1).] Infection may be associated with poor hygiene or behavioral environments in family overcrowded and orphanages where transfer the eggs pinworm from person to another by finger polluted or via anus into mouth directly may transmit by eat contaminated food indirectly [(2).] The clinical symptoms occurs because the migration of the gravid female worst at night when lays eggs lead to excitement, lack sleep, appetite and weight decrease , vomiting and abdominal pain [(3).]

There are many drugs can be help in eliminated on pinworm else will not be beneficial, most common drug is mebendazole family these killed the adult worms only addition to increased resistance these drugs wherefore need for the development of new methods for control and enucleate of the parasitic disease [(4).]

Recently studies suggests that melatonin immune enhance function through presence of melatonin receptor in immune organs, Melatonin is biological processes recurring naturally hormone synthesized in most the pineal gland to blood of mammals also is synthesis in deferent cells, tissues and organs like lymphocytes, skin, eyes and gastrointestinal duct [(5).] Melatonin has been examination studies in parasitic, virus and bacterial infestations [(6).] Act the melatonin to promote antigen display, phagocytic activities and production of monocytes [(7).] Melatonin have important immune-modulatory effects e.g. *Plasmodium* that hepatocytes colonies and red blood cells will causes in death of malaria through that melatonin have precursors derived from the tryptophan will calcium release and modulate the cell cycle of *P. falciparum* [(8).] The melatonin treatment with *Schistosoma mansoni* act on decrease oxidative injury and increase permanence of hamster infected [(9).]

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The goal of this study to specify influenceof melatonin drug against *Enterobius vermicularis* by examined in rats.

Materials and Methods

Collection eggs of *Enterobius vermicularis*:

Eggs were collected from infected children of school in Al-Najaf city, gathered in anus they suffer from anal itching by transparent adhesive tape [10], these eggs incubation at 36ºC in wet flask for 5 days, most eggs were ivied released through vexation of the body, these eggs contained within larva notice circulation movement after three from incubated inside shell, some of them hatch naturally as expressed [11] kept unit used in the experiment.

Preparation of Melatonin Solution

Consider melatonin slightly soluble in water so used dimethyl sulfide and ethanol (DMSO/Germany) to dissolve. Take 2 mg / milliliter 99.9 DMSO-melatonin were prepared as stock solution [12].

Preparation and Infection Animals

90 male wistar rats were weight 100-110 g kept under light period 12h light and 12h dark where divided into three groups each group contain 30 rats were placed in plastic cages contain food and water with a floor furnished with sawdust, good ventilation and continuous cleaning of the cages,500 eggs number within movement larva examined under microscopic were counted from eggs sedimentation by slide chamber, group one were 30 rats infected with 500 egg of *E.vermicularis* only orally as control without drug, group two (Former) were 30 rats were inoculated melatonin pretreated for 7 days before the infection daily orally at dose of 15 mg / kg body weight where dissolved in distilled water then give oral 500 eggs for 30 day and group three (Accompanying) inoculated melatonin with eggs daily at dose of 15 mg / kg body weight give oral 500 eggs for 30 days. Three groups were examining the stool after 10, 20 and 30 days of infection by microscope.

Histology Animals

Rats were numbness with 2.5 pentobarbital and postmortem, intestine were reapers then inglorious 10 formaldehyde to make a histological section of the infection and treated, eosin-haematoxylin stain then examined by microscope in magnification of 100x [13].

Statistical analysis

Results were calculated by analyses data the one way by ANOVA test and statistical significance between groups analyses when ($P < 0.05$).

Results

As shown in table (1) , there is a significant reduce in *E.vermicularis* infection in rats treated with melatonin former at the dose of 15 mg/kg which were 1 and 0 for eggs and worms respectively, while there is a significant decrease in *E. vermicularis* infection in rats treated with melatonin accompanying at a dose of 15 mg/kg which were 21 and 10 for eggs and worms respectively, both after 30 day of treatment compared with control without treated were 390 and 495 for eggs and worms respectively after 30 day of infection. This may due to protective effect of melatonin is put off the appearance of disease, retard death and reduce the mortality rate.

Table 1: Influence of Melatonin drug on count of Eggs & Worms of *Enterobius vermicularis* in rats per 20 microscope fields / days.

Dose Mg/kg	10days		20days		30days		F P value
	Eggs	Worms	Eggs	Worms	Eggs	Worms	
Control (+ve)	500	473	470	480	390	495	58.26 0.001 (LSD = 32)
Melatonin Former 15 mg/kg	213	92	45	9	1	0	
Melatonin Accompanying 15 mg/kg	322	211	105	57	21	10	

LSD : Least Significant Difference

Discussion

Enterobiosis is a human intestinal parasitic disease caused by pinworm infects a lot of people especially children causes symptoms e.g. anal itching, painful or difficult urination, irritation, insomnia repeated infection causes weakened immunity and may lead to death in the absence of treatment [14]. Because of resistance to conventional drug and repeated infection, must search for alternative drugs and low toxicity [15]. In the present study used melatonin drug is suggested that can therapeutic differ agent like immune enhance functions, antioxidant effect, bacterial, fungi viral, and parasites infections, shown significant reduce *E.vermicularis* with melatonin former when dose 15 mg/kg were 1 and 0 for eggs and worms respectively while significant decrease *E.vermicularis* with melatonin accompanying when dose 15 mg/kg were 21 and 10 for eggs and worms respectively, both after 30 day of treatment compared with control without treated were 390 and 495 for eggs and worms respectively after 30 day of infection, this indicates that give melatonin former enhances of the immune response, as in Table 1 .

This may due to protective effect of melatonin is put off the appearance of disease, retard death and reduce the mortality rate [16] , these study consistent with [17] that melatonin have control through of experimental the *Trypanosoma cruzi* infection and lead to reduce the parasitemia levels in rats. Another reported by [18] that melatonin drug cellular immunity activity by increased production lymphocyte in *Toxoplasma gondii* infected in rats. As in other study show reduce *Leishmania* infection to 40 in hamsters infected during the when serum melatonin being high compare to animals infected when melatonin level being low, this indicates that melatonin receptors plays an important role in leishmaniases treatment [19].

As shown in the current study, it have been seen in histological analysis for untreated section granuloma fashioning in the intestine, necrosis, adenoma and hemorrhage of the bowel [20].

There was a statistically increased numbers of leucocytes production which observed in both the accompanying and former melatonin treatment observation tissues necrosis scatter among regions and inflammatory cells sneak shrill comparison with *E.vermicularis* infection only ($P < 0.05$) may due to melatonin increased immune-modulatory activates and have ability on stimulate innate immune cells in positive attachment between melatonin and phagocytic efficacy with infected [21].

This study agreed with [22] showed that exogenously manage melatonin significant reduced the amoebic necrosis areas also increased of leukophagocytosis and number of the dead amoebae.

In other study *Trypanosoma brucei* parasite was given the melatonin infected rats make histological changes in pineal gland where caused in reduce plasma level which may due to release of inflammatory mediators and become not inroad cell [23].

Ethical Clearance : Taken from University of Kufa ethical committee

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Conflict of Interest : Nil

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