# Histological Study on the Renoprotective Effect of Melatonin on Gentamycin-induced Nephropathy in Adult Male Albino Rats

Thesis

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## ABSTRACT

Renal dysfunction and injury secondary to medications are common. Melatonin was found to protect tissues against oxidative damage generated by a variety of toxic agents including aminoglycoside antibiotics.

Fifty male albino rats were randomized into five groups. In group 1, they received vehicle (controls), in group 2 they received melatonin orally for 2 weeeks, in group 3 they were injected with gentamicin only for 2 weeks, in group 4 they were injected with gentamicin plus melatonin for 2 weeks and in group 5 they were injected with gentamycin only for two weeks, and then the it was stopped for three weeks to check for spontaneous recovery.

The animals were sacrificed after two weeks and five weeks from the start of the experiment. Specimens were fixed immediately in 10% buffered formalin for histological and immunohistochemical studies. Image analysis and statistical analysis of the obtained results were performed.

Melatonin only group showed almost normal kidneys similar to control group except that some areas showed dilated medullary tubules. Gentamycin only group showed severe kidney damage, glomerulosclerosis, dilated tubules and hemorrhage. There were increased collagen accumulation, strong PAS +ve reaction in the basal lamina and increased immunoreactivity of COXII when compared with control group. Gentamycin + melatonin group, showed less damage, less hemorrhage and decreased connective tissue when compared to gentamycin-only group. Glomeruli maintained better morphology compared with the gentamycin group. In recovery group, there were severe damage and markedly increased connective tissue distribution when compared to gentamycin only and gentamycin + melatonin groups.

It is concluded that gentamycin plus melatonin was less toxic and had a better effect than gentamycin only.



Keywords: Gentamicin, nephrotoxicity, melatonin, COXII.