شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

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HANAA ALY

NEPHRO-PROTECTIVE EFFECTS OF GRAPE AND GUAVA SEEDS EXTRACT ON GENTAMICIN INDUCED NEPHROTOXICITY IN RATS

Submitted By

Shaimaa Ahmed Abd Elwahab Radwan

B.Sc. of Science, (Biochemistry), Faculty of Women for Arts, Science & Education,
Ain Shams University, 2005

A Thesis Submitted in Partial Fulfillment
Of
The Requirement for the Master Degree
In
Environmental Sciences

Department of Environmental Basic Sciences
Faculty of Graduates Studies & Environmental Research
Ain Shams University

2021

APPROVAL SHEET

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ABSTRACT

The present study was undertaken to investigate the nephroprotective effects of grape and / or guava seeds ethanolic extracts on gentamicin induced nephrotoxicity in rats. Rats were divided into eight experimental groups. Group 1 (control group) was injected intraperitonealy with saline solution; Groups (2, 3 and 4 were administrated a daily oral dose of grape seeds extract (40 mg/kg/day, *p.o*), guava seeds extracts (300 mg/kg/day, *p.o*) or mixture of both, respectively; to demonstrate their safety. Group 5 was intoxicated with gentamicin (100 mg/kg/day, *i.p*). Groups (6, 7 and 8) received oral dose of grape and / or guava seeds extracts along with intraperitoneal injection of gentamicin to investigate the beneficial effect of these extracts against gentamicin nephrotoxicity for a period of consecutive 10 days.

At the end of treatment period, (10 days, 24 hours after the last injection), body weights of rats were determined and animals were sacrificed. Then, absolute and relative kidney weights were determined. The following parameters were measured: serum levels of creatinine, urea, uric acid, total protein, sodium and potassium, serum lipid profile, serum activity of alkaline phosphatase, activity of erythrocyte copper, zinc superoxide dismutase (Cu, Zn-SOD), blood and renal levels of reduced glutathione (GSH) and renal content of malondialdehyde (MDA). The level of gene expression of renal kidney injury molecule-1 (KIM-1) and nuclear factor kappa (NF-κB) were also determined. In addition, histological examination of renal sections was carried out.

The results of the present study revealed that gentamicin injection elevated serum levels of urea and creatinine. Moreover, gentamicin injected rats exhibited a reduction in the activity of erythrocyte Cu, Zn-SOD and blood and renal levels of GSH along with elevation in renal level of MDA. Up-regulation of KIM-1 and NF-κB gene expression was also observed in gentamicin injected rats as compared with normal control. Simultaneous administration of grape and guava seeds extracts with gentamicin attenuated the nephrotoxic effects of gentamicin as indicated by normalization of renal function parameters. In addition, seeds extract reduced renal lipid peroxidation, raised the activity of erythrocyte Cu, Zn-SOD and increased the levels of blood and renal GSH. Moreover, seeds extracts down regulated KIM-1 and NF-κB gene expression. Histopatholgical evaluation supported the biochemical findings.

In conclusion, grape and guava seeds extracts administration to normal rats did not show any physiological negative effects throughout the time of the study, this may point to the relative safety of these extracts. Treatment with grape and guava seeds extracts ameliorated nephrotoxicity via antioxidant and anti-inflammatory effects.

Key words: *Gentamicin, nephrotoxicity, grape seeds extract, guava seeds extract, rats*

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