

Summary

Gentamicin is an effective aminoglycoside antibiotic against severe infections. In spite of inducing nephrotoxicity and oxidative damage, gentamicin is used clinically due to its wide spectrum of activities against Gram negative bacterial infections. Its nephrotoxicity occurs by selective accumulation in renal proximal convoluting tubules. Its nephrotoxicity involves renal free radical generation and reduction in antioxidant defense mechanisms. A potential therapeutic approach to protect or reverse gentamicin-induced oxidative stress and nephrotoxicity would have more importance for clinical consequences. Therefore, the present study was designed to investigate the possible antioxidant protective effects of oxytocin and silymarin against gentamicin-induced renal damage in rats. A total of 40 adult male albino rats were divided into four groups. The first group is the control group that received normal saline (1m/kg/i.p/day for 8 consecutive days), the second group was treated with gentamicin (80mg/kg/i.p/day for 8 days), the third group was treated with gentamicin and oxytocin (5 I.U/kg/i.p/day for 8 days) and the fourth group was treated with gentamicin and silymarin in a dose of (50 mg/kg orally/day for 8 days). Some biochemical and histopathological examinations of kidneys were performed after treatment for evaluation of the oxidative stress and renal nephrotoxicity. Gentamicin treatment significantly increased serum urea, creatinine levels and AST activities. Also gentamicin significantly decreased the total antioxidant capacity and catalase activity in renal tissue. Renal tissue malondialdehyde (MDA) has a non-significant increase, while renal reduced glutathione (GSH) wasn't changed. Study of renal morphology showed degenerative changes in the form of cloudy swelling, hydropic degeneration and glomerular necrosis in gentamicin group. Administration of oxytocin and silymarin with gentamicin ameliorated to some degree the biochemical changes and oxidative stress parameters against gentamicin-induced nephrotoxicity. It was concluded that treatments with these antioxidants could have beneficial effects in treatment of gentamicin induced nephrotoxicity.