Nephroprotective effect of *Solanum nigrum* L. on gentamicin induced toxicity in male albino rats

N.PRIYA AND P. VENKATALAKSHMI

Department of Biochemistry S.T.E.T Women's College, MANNARGUDI (T.N.) INDIA Email : venkatalakshmisathish@ymail.com

(Received: May, 2011; Accepted : Aug., 2011)

Solanum nigrum L., is a medicinal herb that has been used as nephroprotective agent in Chinese medicine. In this study, the protective effect of *Solanum nigrum* L., (SN) against gentamicin-induced nephrotoxicity in rats was evaluated. Nephrotoxicity was induced in Wistar rats by intraperitoneal administration of gentamicin 100 mg/kg/day for eight days. Effect of concurrent administration of fresh juice extract of *Solanum nigrum* at a dose of 100 mg/kg/day given by oral route was determined using serum creatinine, AST, ALT, blood urea, ALP, ACP, reduced glutathione, catalase, glutathione peroxidase and protein as indicators of kidney damage. The fresh juice extract of *Solanum nigrum* significantly protected rat kidneys from gentamicin-induced nephrotoxicity by normalizing the alterations in biochemical parameters. Hence, it can be concluded that the extract possesses significant nephroprotective activity.

Key words : Gentamicin, Nephroprotection, Nephrotoxicity, Solanum nigrum

Priya, N. and Venkatalakshmi, P. (2011). Nephroprotective effect of *Solanum nigrum* L. on gentamicin induced toxicity in male albino rats. *Asian J. Bio. Sci.*, **6**(2):169-172.

INTRODUCTION

The kidneys are organs that filter wastes (such as urea) from the blood and excrete them along with water, as urine. In humans, the kidneys are located in the posterior part of the abdomen. There is one on each side of the spine; the right kidney sits just below the liver, the left below the diaphragm and adjacent to the spleen. The major functions of kidney are excretion of waste products, homeostasis, maintenance of blood pressure, secretion of hormones such as erythropoietin, urodilatin, rennin and 1,25 dihydroxy cholecalciferol.

Nephrotoxicity can be defined as renal disease or dysfunction that arises as a direct or indirect exposure to medicines, and industrial or environmental chemicals. It is well established that toxic nephropathies are not restricted to a single type of renal injury. Some chemicals target one discrete anatomical region of the kidney and may affect only one cell type. Chemical insult to the kidney may result in a spectrum of nephropathies that are indistinguishable from those that do not have a chemical etiology.

Gentamicin is an aminoglycoside antibiotic, used to

treat many types of bacterial infections, particularly those caused by gram-negative organisms. Gentamicin is nephrotoxic, which remains a major problem in clinical use. High doses (40 mg/kg or more) are necessary in animals to rapidly induce extended cortical necrosis and overt renal dysfunction. At this stage, a large number of structural, metabolic, and functional alterations are observed in tubular cells and several of these alterations have been claimed to be responsible for cell death or dysfunction. (Moulds *et al.*, 2010).

Medicinal plants are nature's gift to mankind and are rich ancient heritage of India. Black nightshade is a fairly common herb or short-lived perennial shrub, found in many wooded areas, as well as disturbed habitats (Jansan van *et al.*, 2007). In India, the berries are casually grown and eaten; but not cultivated for commercial use. The berries are referred to as "fragrant tomato," manathakkaali in Tamil. In North India, the boiled extracts of leaves and berries are used to alleviate the patient's discomfort in liver-related ailments, including jaundice. The present study was performed to investigate the nephroprotective effect of *Solanum nigrum* on gentamicin induced nephrotoxicity in rats.