

NOTE**Effect of *Leucas aspera* on Lead Acetate Induced Nephrotoxicity in Rats**

K. SOMA SEKHAR REDDY*, Y. PADMANABHA REDDY, J. RAVINDRA REDDY,
B. RAMESH†, M. SRIRAMA CHANDRA, B. PRADEEP KUMAR and P. SANDHYA RANI
Raghavendra Institute of Pharmaceutical Education & Research, Anantapur-515 721, India

The present work reveals that lead acetate treated 160 mg/kg, kidney showed revealing areas of haemorrhages, atrophic glomerular tufts, tubular epithelial cells revealing degenerative changes. Methanolic extract of *Leucas aspera* treated 100 mg/kg kidney showed mild focal haemorrhages with almost normal appearance of the glomeruli and mild degenerative changes in the tubular epithelial cells. Standard (silymarin) treated 140 mg/kg kidney showed revealing normal glomerular architecture and very mild changes in the tubular epithelial cells. Lignans isolated from methanolic extract of *Leucas aspera* may be useful as nephroprotective agent.

Key Words: *Leucas aspera*, Nephroprotective, Histopathological studies.

In recent years more attention has been focused on free radicals as they play vital role in genesis of various diseases. Lead is a persistent and common environmental contaminant. Like other commonly found, persistent toxic metals like mercury, arsenic and cadmium, lead damages cellular material and alters cellular genetics. The mechanism of all these toxic metals commonly involves oxidative damage and it may produce effects like neurological damage, hypertension and renal impairment. *Leucas aspera* was found to have antiinflammatory activity¹, antioxidant activity², hepatoprotective³ and cytotoxic activity⁴. The standard drug, milk thistle (silybum marianum) seeds containing several potent antioxidant flavonolignans collectively called silymarin have both hepatic and renal protective effects in rodent models. Preliminary phytochemical screening of methanolic and aqueous extracts gave positive tests for lignans and flavonoids. About 500 g of drug powder of each was extracted with methanol and water successively by using Soxhlet apparatus.

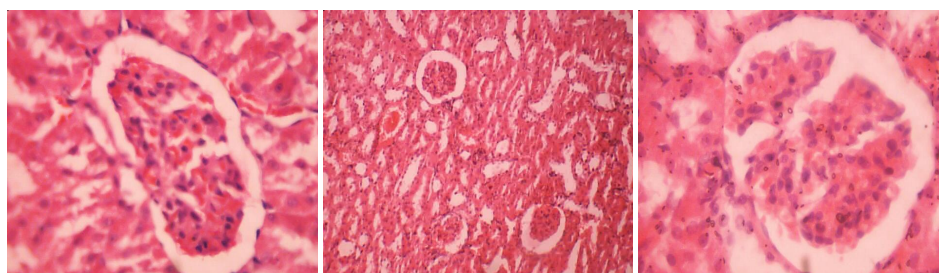
Evaluation of nephroprotective activity: To investigate the nephroprotective activity of methanol and water extract of whole plant of *Leucas aspera* and lead acetate induced male wistar rats. (i) Animals: Male wistar rats, (ii) Drugs: Lead acetate, methanolic and water extract of *Leucas aspera*, silymarin and (iii) Instruments: Oral intubation tube, are required.

†Sri Venkateswara University, Tirupati-517 502, India.

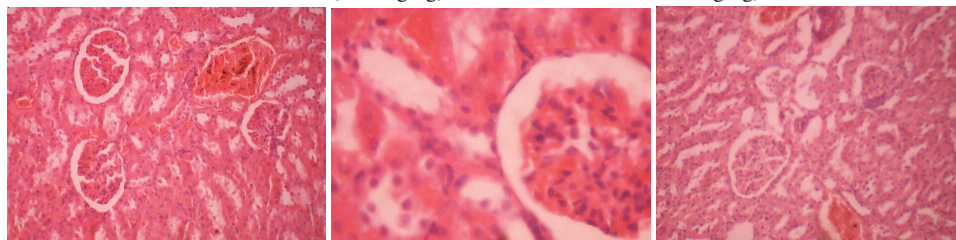
Histopathology: Histopathological studies were carried out in medical college in the histopathology laboratory in Anatomy and Physiology Department, Anantapur, India.

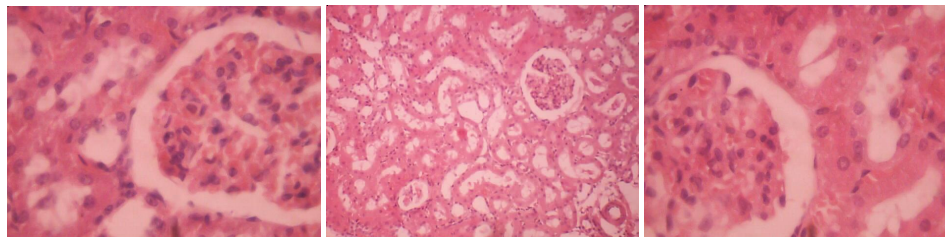
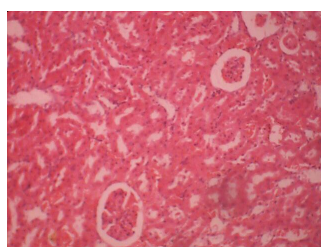
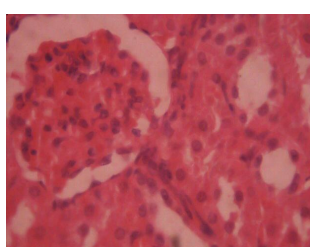
Lead acetate treated 160 mg/kg, 10X kidney showed revealing areas of haemorrhages, atrophic glomerular tufts, tubular epithelial cells revealing degenerative changes. Lead acetate treated 160 mg/kg, 40X kidney showed early necrotic changes, degenerative tubular epithelial cells. Methanolic extract of *Leucas aspera* treated 50 mg/kg 10X kidney showed mild haemorrhages, mild haemorrhagic foci and mild changes in the glomerular tufts.

Methanolic extract of *Leucas aspera* treated 50 mg/kg 40X kidney showed glomerular with mild changes focal area of haemorrhage and mild tubular epithelial damage. Methanolic extract of *Leucas aspera* treated 100 mg/kg 10X kidney showed mild focal haemorrhages with almost normal appearance of the glomeruli and mild degenerative changes in the tubular epithelial cells. Methanolic extract of *Leucas aspera* treated 100 mg/kg 40X kidney showed normal glomerular architecture and mild degenerative changes in the tubules (regenerative appearances). Methanolic extract of *Leucas aspera* treated 200 mg/kg 10X kidney showed section revealing normal architecture of glomeruli only mild degenerative changes in tubular epithelial cells. Methanolic extract of *Leucas aspera* treated 200 mg/kg 40X kidney showed higher magnification revealing regenerative glomeruli and almost normal architecture of the tubules. Standard (silymarin) treated 140 mg/kg 10X kidney showed revealing normal glomerular architecture and very mild changes in the tubular epithelial cells. Standard (silymarin) treated 140 mg/kg 40X kidney showed revealing glomerular architecture and normal architecture tubular epithelial cells.



Normal kidney

Lead acetate treated kidney
(160 mg/kg) 10XLead acetate treated kidney
160 mg/kg) 40XMethanolic extract of *L. aspera*
treated kidney (50 mg/kg) 10XMethanolic extract of *L. aspera*
treated kidney (50 mg/kg) 40XMethanolic extract of *L. aspera*
treated kidney (100 mg/kg) 10X

Methanolic extract of *L. aspera*
treated kidney (100 mg/kg) 40XMethanolic extract of *L. aspera*
treated kidney (200 mg/kg) 10XMethanolic extract of *L. aspera*
treated kidney (200 mg/kg) 40XStandard silymarin treated kidney
(140 mg/kg) 10XStandard Silymarin treated kidney
(140 mg/kg) 40X

Conclusion

The study seemed to reveal that lead acetate and high antioxidant nutrition play the aggregative and alleviative roles, respectively in the contest of oxidative stress status in tubular epithelial cells. The present study concluded that lignans isolated from methanolic extract of *Leucas aspera* may useful as nephroprotective agent.

REFERENCES

1. H. Shivakumar, M.D.A. Asif and T. Prakash, *Adv. Pharmacol. Toxicol.*, **7**, 39 (2006).
2. K. Srinivas, M.E.B. Rao and S.S. Rao, *Indian J. Pharmacol.*, **32**, 37 (2000).
3. K. Mangathayaru, X.G. Fatima and M. Bhavani, *Indian J. Pharmacol.*, **37**, 329 (2005).
4. M.S. Rahman, S.K. Sadhu and C.M. Hasan, *Fitoterapia*, **78**, 550 (2007).

(Received: 6 February 2009;

Accepted: 5 December 2009)

AJC-8143