Hepatoprotective Activity of *Nigella sativa* Linn

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Accepted 26 June 2003
Revised 3 April 2003
Received 11 July 2002

Aqueous extract of the seeds of *Nigella sativa* were tested for hepatoprotective activity on male Wistar rats against carbon tetrachtoride induced hepatotoxicity. Various biochemical parameters were studied to evaluate the hepatoprotective activity. Aqueous extract showed significant hepatoprotective activity against carbon tetrachloride-induced toxicity on the liver indicating promising hepatoprotective activity.

Seeds of plant of *Nigella sativa* Linn (Ranunculaceae) is commonly known as black cumin and in Sanskrit as *krishna jiraka*. The seeds are used as aromatic, carminative, diuretic, antihelmintic, emmenagogue, antibacterial, galactagogue, anticough, abortifacient and in the treatment of jaundice[1,2]. Although the drug is used in Ayurveda as one of the ingredients of many liver tonic formulations[3], to support the above claim, the present study was carried out in rats.

Nigeria sativa seed was purchased from local market and was identified in department of Pharmacognosy, Captain Srinivasamoorthy Drug Research Institute, Arumbakkam, Chennai-600 106. The powdered seed material was boiled with distilled water, filtered, filtrate was concentrated. The extract were dissolved in 1% carboxy methyl cellulose (CMC) and used for the experiment. Adult male Wistar rats weighing 150-200 g were used in the study. The animals were obtained from King's Institute, Guindy, Chennai, India. They were fed on commercial diet (M/S Sai durga feeds and food, Banglore) and tap water *ad libitum* during the experiment. Since the IAEC of the institute has not been constituted at the time when the protect was carried out, animal experiments were carried out whithout the approval of an IAEC. However, the animal experiments were carried out in an ethical manner to the best of our ability.

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Four groups of 6 male rats each, weighing between 150-200 g, was selected. Group I animals were served as normal control, received 1% CMC (5 ml/kg/p.o) once a day for 7 d. Animals in Group II received a single dose of carbon tetrachloride (CCl_4), 50% v/v of CCl_4 in olive oil 4 ml/kg, p.o on day 6. Group III were given extract (500 mg/kg, p.o., suspended in 1% CMC) once a day for 7 d and single dose of CCl_4 (50% v/v of CCl_4 in olive oil 4 ml/kg, p.o) given on day 6. All animals were sacrificed on day 8 by decapitation. Blood was collected by carotid bleeding and serum separated out and used for estimation of serum bilirubin by modified Jendrassik and Grof's[4-6] method (using a kit from Dr. Reddy's Laboratories, Diagnostic Division, Hyderabad, India), total protein[7-9] by Biuret method, glutamate oxaloacetate transaminase (GOT) and glutamate pyruvate transaminase were determined by Scandinavian Committee on Enzymes (SCE) method[10-12] (using kits from Reckon Diagnostics Pvt. Ltd., Baroda, India). Student 't' test was used for statistical analysis of data. The level of significance of $p<0.001$ was choosen for determining significance differences.

The results of hepatoprotective activity of *Nigella sativa* seed extract against CCl_4 induced hepatotoxicity in rats were shown in Table 1. It revealed that significant elevation of total bilirubin, serum enzymes level and significant decrease in protein in CCl_4-treated group compared to control group, indicating that CCl_4-induced damage of the liver. A significant reduction was observed in total bilirubin, serum enzymes level and no significant change in protein level in the group treated with aqueous extracts of *Nigella sativa* in

TABLE 1: ACTIVITIES OF *NIGELLA SATIVA* ON CCL_4-INDUCED HEPATOTOXICITY IN RATS.

Serum Biochemical Parameters	Treatment (Group)		
	Normal Control (I)	CCl_4 (II)	*Nigella sativa*+CCl_4 (III)
Total Bilirubin (mg/dl)	0.29±0.01	0.64±0.015*	0.25±0.00**
GOT u/ml	38.3±2.08	76.5±4.23*	51.8±4.43**
GPT u/ml	30.9±2.68	54.0±4.37*	42.8±8.37**
Total Protein (mg/dl)	5.42±0.05	2.55±0.06*	2.62±0.04

All values are mean±SEM of 6 animals in each group. Group II compared with Group I (*p<0.001) and Group III Compared with Group II (**p<0.001).

comparision with those observed in CCl_4 treated group. It can be conclude that aqueous extract of *Nigella sativa* has good hepatoprotective activity. This study provides a basis for further detailed investigations on the therapeutic efficacy of *Nigella sativa* for ascertaining their hepatoprotective potential climed in the indigenous systems of medicine.

ACKNOWLEDGEMENTS

The authors are grateful to Thirumathi Laxmi Bangaru Adigalar, Vice-President, Adhiparasakthi College of Pharmacy, Melmaruvathur for providing necessary facilities to carryout this work.

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