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PROTECTIVE EFFECT OF *TRIDEX PROCUMBENS L.* AGAINST POLLUTED WATER INDUCED HEPATOTOXICITY IN ALBINO RATS

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ABSTRACT

To isolate the hepatoprotective active compounds from the methanolic extract of *Tridex Procumbens L.* & to investigate its possible hepatoprotective activity against polluted water induced hepatotoxicity in albino rats The use of plants as a source of remedies for the treatment of many diseases dated back to prehistory & the people of all the continents have this old tradition. *Tridex Procumbens L.* is a medicinal plant traditionally used as an abortifacient & to treat constipation, oedema, bacterial infection, cancer & diabetes. Preliminary phytochemical screening of the plant showed the presence of large amounts of Terpenoids, phenolics & flavonoids. The rats were divided into six groups of six animals in each group. Group 1. Served as a normal control received only distilled water. Group 2. Served as a diseased control & received polluted water orally for 10 days to induce hepatic damage. Group 3 & 4 served as test groups & received 100 & 200 mg / kg bw of the 90% methanolic extract of *Tridex Procumbens L.* respectively. Group 5. Served as a standard & received silymarin at a dose of 100 mg / kg b.w. Different hepatic biochemical parameters viz. Aspartate transaminase (AST), Alanine transaminase (ALT), Alkaline phosphatase (ALP), Total proteins, Bilirubin, Body weight before & after treatment were evaluated to investigate the hepatoprotective activity. Among different hepatic biochemical parameters total proteins were reported less in group 2 i-e in diseased group as compared to the normal control. Rests of the parameters were significantly increased in diseased group which is the prime indication of hepatic damage. Administration of 200 mg /kg b.w of *Tridex Procumbens L.* effectively reduced these pathological damages & promotes the body weight in albino rats. The results of the

present investigation indicate that the methanolic extract of *Tridex Procumbens L*. possesses good hepatoprotective activity.

KEYWORDS: *Tridex Procumbens L*., Hepatoprotective, Polluted water, Silymarin

INTRODUCTION

Tridex Procumbens L. commonly known as Coatbuttons or Tridax daisy *is* a Species of flowering plant in the Family of Asterceae. It is best known as a wide spread weed and pest plant it is native to the tropical Americas. Liver is the main organ for metabolism, secretion, storage and has tendency to detoxify the drugs or toxic substances. Therefore damage to the liver inflicted by hepatotoxic substances is of grave consequences (Shahani S 1999). Most of the hepatotoxic chemicals damage liver cells mainly by inducing lipid per oxidation and other oxidative damages (Dianzani *et al* 1991). In addition serum levels of many biochemical markers like aspartate transaminase, alanine transaminase, alkaline phosphatase and bilirubin were also elevated (Zimmermaa HJ & Seff LB 1970). In spite of the medicinal claim for the fruit as a hepatoprotective, there are no reports in the literature regarding this pharmacological effect use as a hepatoprotective agent. Any part of the plant may contain active components (Gordon & David 2001). The effective substances of many plant species are isolated for direct use as drugs, lead compounds or pharmacological agents (Fabricant &Farnsworth, 2001). The curative properties of medicinal plants are mainly due to the presence of various complex chemical substances of different composition which occur as secondary metabolites (Karthikeyan *et al*., 2009; Lozoya and lozoya, 1989). Many plants possess antimicrobial activities and are used for the treatment of different diseases (Arora & Kaur, 1999). Recent studies have shown that *Tridex Procumbens* can have an antidiabetic, carcinogenic, antioxidant and antibacterial activities (Al-Ghaithi *et al*., 2004; Dehghani *et al*., 2008; Kumar *et al*., 2008; Dallak *et al*., 2009; Memon *et al*., 2003). Thus the present study was performed to evaluate the hepatoprotective activity of methanolic extract of Leaves of *Tridex Procumbens L*. against polluted water induced hepatotoxicity.

MATERIAL AND METHODS

Preparation of extract

Fresh 5 kg of *Tridex Procumbens L*. Leaves were collected from Outer side of Udhampur district (J.K). The Leaves were shade dried & the coarsely powdered Leaves were defatted with n-hexane using soxhlet apparatus. The defatted material was further extracted with methanol & the extract thus obtained was concentrated using rotary evaporator.

Expermental Animals

Albino rats (150-200g) were obtained from pest control & Ayurvedic Drug Research Lab. The rats were maintained in their relative groups for 20 days before the beginning of the experimental procedure. They were housed at a temperature of 25±1°C with 50±10% relative humidity & with a 12:12 hr light / dark cycle.

Experimental Design

The rats were randomly divided into 5 groups consisting of 6 animals in each group.

Group 1. Served as control.

Group 2. Received polluted water orally for 10 days.

Group 3 & 4. Received 100 & 200 mg / kg b.w of the extract respectively in the form of an aqueous suspension.

Group 5. Received known hepatoprotective compound i-e silymarin at a dose of 100mg/kg b.w along with polluted water.

HEPATOPROTECTIVE ACTIVITY

The rats were kept overnight fasting after 10 days and blood samples were collected by retro orbital puncture under ether anesthesia and the serum was used for estimation of biochemical markers like AST, ALT, ALP, total proteins, bilirubin.

Statistical Method

The data were expressed as mean ± SEM (n =6). Statistical significance was determined by one way ANOVA followed by Dennett's test. A 95 % confidence interval, P values less than 0.05 were considered significant.

RESULTS AND DISCUSSION

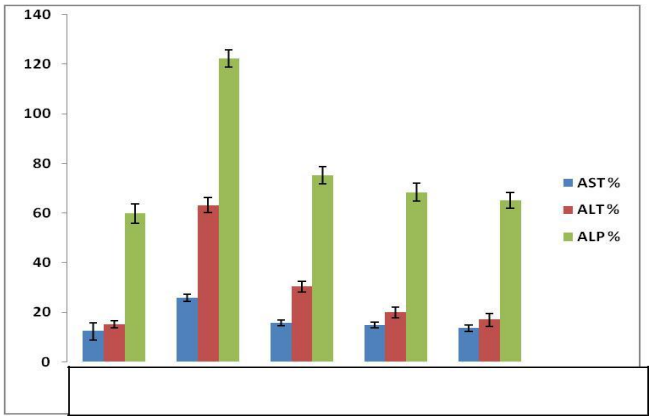

Fig. 1: Effects of methanolic extract of the Leaves of Tridex Procumbens L. on hepatic marker enzymes against polluted water induced hepatotoxicity in albino rats.

Fig. 1. In the present study the damage of liver due to polluted water was confirmed by elevated levels of biochemical parameters like AST, ALT, and ALP. This is due to the fact that hepatic cells possess a variety of metabolic activities & contain a host of enzymes viz. SGPT, SGOT found in higher concentration in cytoplasm & SGPT particularly in mitochondria. In liver injury the transport function of hepatocytes is disturbed, resulting in the leakage of plasma membrane thereby causing leakage of such enzymes leading to the increased serum levels of them. Treatments with 90% methanolic extract of *Tridex Procumbens L*. decreased the elevated levels of AST, ALT which may be a consequence of the stabilization of plasma membrane as well as repair of hepatic tissue damage caused by polluted water.

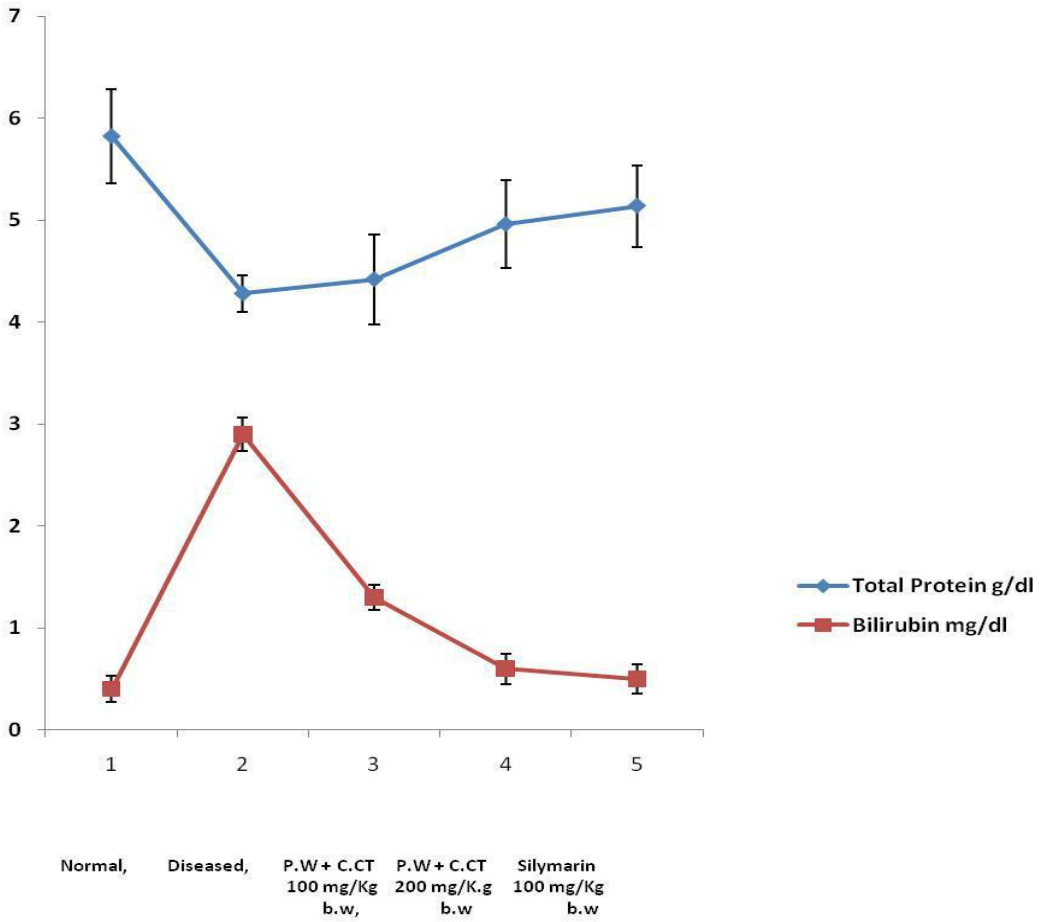

Fig 2: Effects of methanolic extract of the Leaves of Tridex Procumbens L. on hepatic total protein and bilirubin against polluted water induced hepatotoxicity in albino rats.

Fig. 2. Clearly indicates that the protein concentration is less in group 2nd i-e in diseased group as compared to the normal control and in the group 3rd it becomes almost equal to group 1st. The different doses between 100mg and 200mg b.w were observed in the present

study after the polluted water induced hepatotoxicity in rats. The bilirubin level also got increased in group 2nd which is a prime indication of jaundice. Administration of 200 mg /kg b.w of plant fruit extract effectively reduced these pathological damages caused by the polluted water. It was noticed that liver showed congested central vein, portal inflammation & necrosis in the polluted water treated rats. These changes got reversed when 200mg /kg b.w dose was given to the rats.

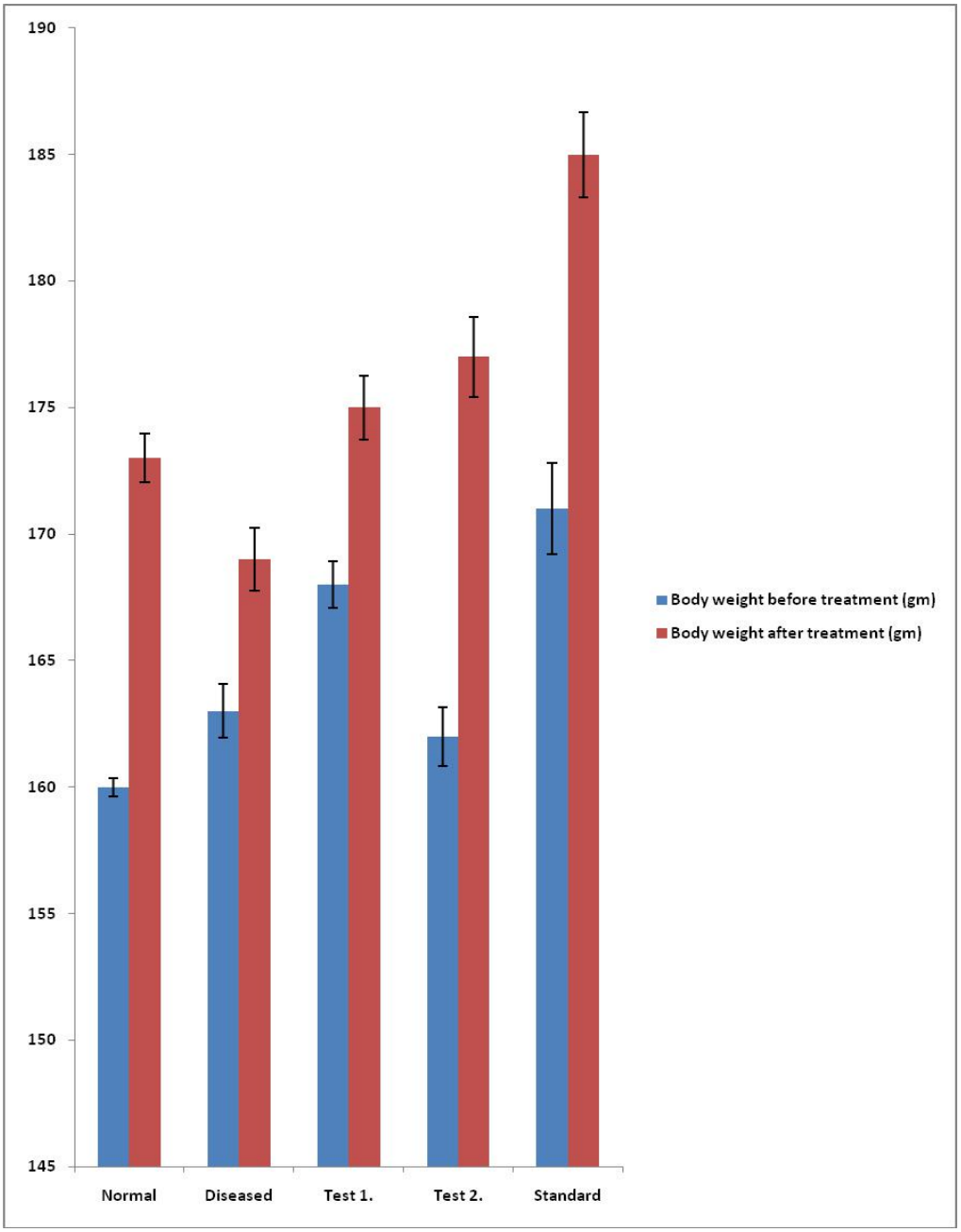

Fig. 3: Effects of methanolic extract of the Leaves of Tridex Procumbens L. on body weight (before & after treatment) against polluted water induced hepatotoxicity in albino rats.

Fig. 3. Showed the effect of methanolic extract of the Leaves of *Tridex Procumbens L*. on body weight (before & after treatment) against polluted water induced hepatotoxicity in albino rats. From these results we may conclude that the methanolic extract of Leaves of *Tridex Procumbens L*. promotes the body weight in albino rats. Thus it may be concluded that the methanolic extract of the Leaves of *Tridex Procumbens L.* showed protective effect against polluted water induced hepatotoxicity in albino rats.

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