

***Title of the Project:***

**Protective role of *Cichorium intybus* and Purslane oleraceae against hepato-renal injury manifested by heavy metal.**

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**EXECUTIVE SUMMARY**

Manganese is an essential trace element and plays vital role in biological reactions and off course in the biochemistry of animals and plants. It also known to activate numerous enzymes those are necessary to regulate the biological activity in day to day life support. It is reported to create metal- metal complex formation in the association of other metal ions. However it was recorded that higher intake /supplement of manganese caused numerous toxic manifestations. A severe crippling neurological disorder similar to Parkinson's Disease was noted in manganese miners ( Underwood, 1976). The lung tumor was recorded by Stoner *et. al* (1976) and Susumu *et. al.* (1984) in manganese exposed experimental animals .The excessive manganese intake by rats also resulted in proliferation of smooth endoplasmic reticulam ( Bonilla 1978, Donaldson *et al.* 1981).

In 1965, Baxter and his co-workers reported that the subcutaneous dose of manganese dichloride produces hepatic necrosis in rats.

In our previous studies we have recorded that manganese chloride produces hepatic cell necrosis inhibition of the activity certain key enzymes ,decrease the synthesis of Collagen and glycogen, disturbances in the plasma membrane and cell organelles . We have also recorded the changes in the haematological parameters as decreased values of haemoglobin percentage, haematocrit value , RBC and WBC , however the serum enzymes like SGOT and SGPT were increased.

As we selected two medicinal plants *Cichorium intybus* and *Purslane oleraceae* to check their therapeutic values against the toxicological lesions manifested by manganese chloride in the liver kidney and blood of the experimental animal. These plants are used by some tribals.

*Cichorium intybus* has variety of Steroids , specific flavonoides , Vitamines, alfa- amylin teraxesone etc. those involved in biological reactions and bind with manganese ions to form metal complex to excrete through kidneys. Similarly *Purslane oleraceae* is also a small plant having medicinal values as it has also many Steroids , flavonoids and Vitamines for the selectivity of metal ions from the different cells/ tissues /organs of the body.

We have recorded many therapeutical reports of these two plants from literature and then collected the plants , identified by Dr. K. S. Vishwakarma . The leaves were separated, washed , cleaned and then dried in shade. We extracted these leaves by chloroform and then solid material was prepared for the experimental use.

First, we recorded all observations after the exposure of manganese in blood , liver and kidney. The haemoglobin percentage haematocrit value , Total RBC and WBC were decreased while the values of serum enzymes SGPT and SGOT were increased. Post treatment with the extract of *Cichorium intybus* and *Purslane oleraceae* all these values of blood parameters were reversed towards normal values at different levels.

Similarly the lesions recorded as the manifestations of manganese in liver and kidney like necrosis , pycnotic nuclei, glomerulo-nephritis, damage of the brush border of Proximal convoluted tubules and Distal convoluted tubules , disturbed plasma membrane etc. were somewhat reversed towards their normal histological structures after the treatment of *C. intybus* and extracts. The histochemical observations on key enzymes as alkaline phosphatase, acid phosphatase, Glucose-6-phosphatase and Cholinesterase after the exposure of manganese recorded declined from control values .After the treatment with the extracts of *C. intybus* and *P. oleraceae* all the decreased values of the enzymes were reversed near to the control values.

Therefore this is the indication from the present findings that both these plants *Cichorium intybus* and *Purslane oleraceae* have medicinal / therapeutic values against the toxicological lesions of manganese .

The present study will open the new channels in the field of pharmacological and therapeutical sciences for the future applications . This field warrants further research work for confirmation, accuracy and societal benefits.