Methanolic extract of M. cordata roots was prepared and kept at 4°C till use, (Yield 12.5 gms of extract per kg of whole roots). This extract was subjected of pharmacological study.

The present study was attempted towards development of a superior anti-inflammatory drug from indigenous medicinal plant. The investigation has been carried out in three different phases. The main theme of the 1st phase was to assess the anti-inflammatory, anti-arthritic and anti-gout activity of the methanolic fraction of the extract in different animal models and as well as to evaluate the efficacy of the extract in inflammatory processes. Some biochemical studies were also undertaken and preliminary attempts were made to isolate and identify (at least the qualitative nature) of the active principle(s) of M. cordata root extract responsible for anti-inflammatory activity.

The 2nd phase was aimed to assess the effect of the extract on gastro-intestinal ulcer models in experimental animals since almost all non-steroidal anti-inflammatory agents are known to be potentially ulcerogenic in nature. In the 3rd phase some attempts were made towards studying the other pharmacological action of M. cordata root extract mainly with respect to the actions on CNS, general pharmacology and acute toxicity.
M. cordata root extract inhibited the carrageenin-induced oedema, turpentine-induced joint oedema and oedema induced by different mediators of inflammation (e.g. Histamine, Serotonin, PGE\(_1\), Hyaluronidase) excepting bradykinin-induced oedema. The anti-inflammatory effect of M. cordata root extract was compared with standard anti-inflammatory agents e.g. Phenylbutazone, Ibuprofen and Boswella serrata (an anti-inflammatory drug of plant origin, marketed in India) against carrageenin-induced oedema. It was observed that the anti-inflammatory potency of M. cordata root extract was lesser than that of Phenylbutazone and Ibuprofen but more than B. serrata. The ED\(_{50}\) of M. cordata crude extract was found to be 48.41 mg/kg (i.p.). It successfully and significantly inhibited both phases of carrageenin-induced oedema. The anti-inflammatory effect of M. cordata in this model, was found to be mediated (at least partially) through the pituitary adrenal axis.

M. cordata root extract inhibited the yeast-induced pyrexia in rats and acetic acid-induced pain in mice thereby demonstrating significant antipyretic and analgesic effects.

From these findings, it is evident that M. cordata root extract inhibited the cardinal signs of inflammation, e.g. oedema, increase in temperature and pain.
M. cordata root extract interfered with other important events accompanying the inflammatory process, e.g. exudation of fluid, migration of leucocytes and granuloma formation. These were evident from observation of the facts that M. cordata root extract reduced the protein accumulation in acetic acid-induced peritoneal inflammation in mice and also inhibited the protein bound dye leakage in mice. The M. cordata root extract inhibited the migration of leucocytes to pleural cavity in carrageenin-induced pleural inflammation in rats as well as inhibited cotton pellet granuloma and carrageenin-induced granuloma pouch formation in rats.

M. cordata was also found to be significantly effective in different animal models of experimental arthritis. It reduced the paw diameter in formaldehyde-induced arthritis, and also Freund's complete adjuvant-induced arthritic condition.

M. cordata root extract also reduced monosodium urate-induced acute gout in rats.

M. cordata root extract also influenced some biochemical parameters accompanying inflammation. It inhibited the transaminase activity in inflamed rats and stimulated the adenosine triphosphatase activity in normal and inflamed rats. M. cordata root extract also reduced the collagen formation in granulation tissue.
Preliminary attempts were made towards isolation and identification of the active principle responsible (at least the qualitative nature) for anti-inflammatory effect. It was found that one pooled fraction (39-51) of the residue collected after chromatography possesses anti-inflammatory activity. The residue which possesses potent inhibitory effect was subsequently subjected to physico-chemical tests (Chemical, UV analysis and IR study) and was identified to be a phenolic compound with amides and carbonyl chromophore (at least qualitatively) with possible indication of similar to flavonoid compounds.

In the 2nd phase of our work the effects of *M. cordata* root extract on experimental gastroduodenal ulcer models were investigated.

Both preventive and healing tests were performed. In the preventive test models *M. cordata* root extract demonstrated significant inhibition of acetyl salicylic-induced gastric lesions, steroid-induced gastric ulcers, serotonin-induced gastric lesions and indomethacin-induced gastric ulcers in rats as well as histamine-induced duodenal ulcers in guinea pigs. *M. cordata* root extract also demonstrated very impressive results in the ulcer healing tests in rats as significant enhancement of healing rate in acetic acid-induced gastric ulcers was observed.
In the 3rd phase attempts were made to investigate the other pharmacological properties of *M. cordata* root extract. The *M. cordata* root extract was found to produce alteration in the general behaviour pattern, reduction in spontaneous motility, hypothermia in normal mice, and potentiation of pentobarbitone sleeping time in mice. The *M. cordata* root extract was found to antagonise selectively secondary conditioned response in rats and also demonstrated antagonism to amphetamine-induced group toxicity in mice.

The effect of *M. cordata* root extract was further investigated on exploratory behaviour pattern, aggressive behaviour pattern and muscle relaxant activity. In the studies on exploratory behaviour of experimental animals, the *M. cordata* root extract reduced head dip and residual curiosity in mice, the extract in combination with amphetamine produced significant increase in head dips in mice.

The *M. cordata* root extract also reduced the exploratory behaviour in Y-maze test in rats. The *M. cordata* root extract inhibited aggressive behaviour in electro-shock-induced fighting mice and significant result was observed in chimney test in mice while no muscle relaxant activity was found to occur in rotarod, inclined screen and traction tests.
M. cordata root extract did not offer any protection against either pentylenetetrazole-induced convulsion or strychnine-induced convulsion in mice. No significant analgesic activity was found to occur with M. cordata root extract against tailclip-induced algesia and caudal immersion test in mice.

M. cordata root extract did not affect cat blood pressure. It failed either to contract or relax the isolated smooth muscle preparations like guineapig's ileum, rat uterus. The extract also did not affect the rat phrenic nerve-diaphragm preparation.

All these facts suggest that M. cordata (in the doses employed) possessed a CNS depressant effect in addition to its anti-inflammatory activity with practically no action on smooth muscle, neuro-muscular preparation and blood pressure. In tests concerning the acute toxicity, no mortality was found to occur up to a dose of 1500 mg/kg, and the dose ranges that have proved to elicit anti-inflammatory effect did not produce any toxic manifestation except only one change in behaviour e.g. decrease in frequency of movement which was almost definitely due to its central nervous system-depressant action.