4.0 SUMMARY AND CONCLUSION

In the present study analgesic, antipyretic, antiinflammatory and antiarthritic activities of blue green algae *Spirulina fusiformis* (MCRC isolate) was evaluated and supplemented with biochemical investigations in adjuvant induced arthritic rats.

*Spirulina* is one of the planktonic blue green algae described as sea grass in the traditional system of medicine. Spirulina is rich in vegetable protein, C-phycocyanin, β-carotenes, vitamin B₁₂, iron, trace elements, essential fatty acids, GLA and is recommended in the treatment of various refractory diseases for which there is no effective remedy in the modern system of medicine.

Spirulina exhibited significant analgesic and antipyretic action in the dose of 1500 mg/kg b.wt. However, analgesic and antipyretic activity of *Spirulina* was less than (5 mg/kg b.wt.) that of Nimesulide, a standard NSAID used as reference drug.

*Spirulina* is free from ulcerogenic property when given for a period of 6 days. However, Nimesulide produced ulcerogenic effect in the dose of 20 mg/kg b.wt. This result shows the advantage of spirulina for the long term therapy of chronic inflammation and rheumatoid arthritis conditions. SP exhibited a significant antiinflammatory activity in carrageenan induced hind
paw oedema. This result showed the clinical efficacy of the spirulina in acute inflammatory condition. *Spirulina* administration significantly increased the body weight of adjuvant challenged animals in both developing and established arthritis. Body weight increment may be attributed to its high protein profile with antioxidant properties. Spirulina treatment also showed a significant increment in the Hb% with a decrement in ESR in arthritic rats. This action of SP may be the result of various vitamins and minerals synergistically acting on the hematopoietic system. SP administration in arthritic rats showed a significant decrease in the cholesterol, Triglyceride, LDL and VLDL cholesterol and simultaneously increased the level of HDL cholesterol compared to untreated arthritic rats. Spirulina treatment also significantly reduced the LPO level in plasma, liver, kidney and Erythrocyte membrane when compared to untreated arthritic rats. SP treatment restored the level of antioxidants and this antioxidant property may be responsible for the reduction of LPO in arthritic rats.

The decrement in the lipid peroxidation may also be a contributing factor to increase the level of membrane bound adenosine triphosphatases in arthritic rats treated with SP.

SP is non toxic and no mortality was observed even in the highest dose of 15 gm/kg b.wt/p.o. SP did not exhibit any toxic effect on the target organs like liver, kidney, heart and adrenals.
This study conclusively justifies the use of this blue green algae as a health supplement in the form of powder, capsules and tablets for the treatment of chronic inflammatory diseases like rheumatoid arthritis and osteoarthritis.

The present study and its findings have increased the scope for this blue green algae to be evaluated further clinically for its potentialities in the treatment of acute and chronic inflammatory diseases like rheumatoid arthritis, osteoarthritis, systemic lupus erythematosus (SLE) by a well planned protocol in clinical medicine.