SUMMARY

Semecarpus anacardium Linn. is a potent drug against variety of ailments and is popularly known as ‘Ardha Vaidhya’. A siddha preparation of Semecarpus anacardium nut extract called Serankottai Nei was used in this study to assess its antiarthritic effect on adjuvant arthritis.

Initially, the toxicity study of the drug Semecarpus anacardium was carried out in albino rats. The drug was found to be nontoxic upto the acute dose level of 2000 mg/kg body weight. During the subacute toxicity study, the drug did not induce any adverse changes on the biochemical parameters studied.

The effective dose of the drug on adjuvant induced arthritis was found to be 150 mg/Kg body wt.

Biochemical investigations were carried out to bring in to light both the prophylactic and therapeutic effect of the drug in adjuvant induced arthritis.

The observed physiological changes such as decreased body weight gain and increased paw diameter during arthritic condition were normalized in drug treated animals.

The haematological profile of arthritic rats showed an increased WBC count and ESR with a simultaneous decrease in the hemoglobin and RBC count. Upon treatment with the drug all the above changes were reversed.
Increase in plasma urea and creatinine level with concomitant decrease in plasma uric acid, and urinary urea, uric acid and creatinine level were noted in adjuvant induced arthritis. The urinary enzymes such as NAG, β-glucuronidase, γ-GT and alkaline phosphatase were increased in arthritis induced animals. After 14 days treatment with the drug *Serankottai Nei* the changes observed in arthritic conditions were reversed.

No significant changes were observed in tissue cellular constituents such DNA, RNA, and protein due to arthritic induction and drug administration. But a slight increase in lipid level with concomitant decrease in glycogen level were observed in adjuvant arthritis. The drug administration corrects the above mention changes in arthritic condition.

The activities of lysosomal enzymes were increased and the stability of lysosomes were decreased in arthritic animals. Administration of the drug decreased the activities of the lysosomal enzymes and increased the stability of the lysosomes thus proving itself to be an effective anti-inflammatory agent.

During the acute and chronic phases of arthritis, the biphasic changes in lipid metabolism (Lipid profiles, Lipid metabolising enzymes, and Lipoproteins) were observed. However, upon treatment with the drug, these changes were reverted back to near normalcy. Confirming its beneficial effect on arthritis, the drug was also found to prevent the adjuvant progression by altering the lipid metabolic changes during acute phase.

The increased lipid peroxides levels, in plasma, erythrocyte membrane, and tissues showed increasing susceptibility to free radical reaction during arthritic condition which in turn support the decreased non-enzymic
and enzymic antioxidants except superoxide dismutase. However, the drug treatment highlights the fact that the antioxidant potential of the drug decreased the lipid peroxide level. This free radical scavenging effect and antioxidant potential of the drug may be attributed to the presence of flavonoids in the drug.

The levels of acute phase proteins were also studied in arthritis. The acute phase proteins such as CRP, ceruloplasmin, fibrinogen and haptoglobin levels were significantly increased in arthritic condition. The prophylactic and therapeutic action of the drug was inferred from the reduced acute phase proteins level in plasma of drug treated arthritic animals.

Knee joint cartilage collagen level was significantly decreased in arthritic animals, through its increased degradation by the released lysosomal enzymes. The drug showed its beneficial effect by inhibiting the cartilage degradation in drug treated arthritic animals.

Increased osmotic fragility associated with arthritic anemia was observed in this study. Drug treatment improves the anemia through the decreased osmotic fragility and also by causing the haemoglobin level increase.

Tissue and erythrocyte membrane adenosine triphosphatase such as Na+,K+-ATPase, Mg2+-ATPase and Ca2+-ATPase were significantly inhibited during arthritic condition. *Serankottai Nei* administration corrected the above mentioned changes. This activity of the drug helps to maintain the ionic concentration inside the cell by causing membrane stability and integrity.
The radiological findings might also testify the antiarthritic potential of the drug. This effect may be correlated with its therapeutic potential to produce the symptomatic relief in rheumatoid arthritis.

Histopathological changes as observed during the arthritic condition and drug treatment are in good agreement with the biochemical changes associated with arthritis which were counteracted by the drug bringing back ease in diseased, i.e. arthritis suffering, animals.

Based on the present investigation, it can be concluded that the Siddha preparation Serankottai Nei has got definite antiarthritic property which can be evidenced from the pronounced ameliorating biochemical changes initiated and induced in the index parameters deranged due to the adjuvant arthritis in rats. This kind of finding can be exploited in the treatment of rheumatoid arthritis with Semecarpus anacardium Linn.