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Deterioration of lipid and hematological parameters in complete Freund's adjuvant (CFA) induced arthritis in rats and their restoration by treatment with ayurvedic formulations

Madhavi G Patel¹ and Kilambi Pundarikakshudu²

¹Parul Institute of Pharmacy - Parul University, India

²L J Institute of Pharmacy, India

Statement of the Problem: Chronic arthritis induced by CFA in rats produced worsening of lipid parameters and reduction in hemoglobin levels. It is of interest to see the effect of three formulations of Ayurveda claimed to be effective in treating arthritis on lipid profiles and hemoglobin levels in rats.

Methodology: Arthritis was induced by administration of complete Freund's adjuvant (CFA) into the sub-plantar surface of left hind paw of the animals. Ethanol extracts of Ayurvedic formulations (Vatari Guggulu, Pathyadya Churna and Shatpuspadya Churna) were administered to the rats by oral gavages in different doses. Changes in total cholesterol, triglycerides, HDL, LDL, VLDL, RBC, WBC, packed cell volume, platelets, ESR and RF were noted. Changes in the histology of the inflamed joints were also studied.

Findings: CFA treatment brought about maximum swelling of the rat paw after 14 days and persisted till the end of the study i.e. 28 days. There was a dose dependent reduction in the swelling of the rat paw from day 14 to day 28 in all the three formulations. Significant reduction in levels of Hb (28.4%) and PCV (30.5 %) in arthritic rats with simultaneous increase in WBC (28.0%), platelet count (40.7%), ESR (52.5%) and RF (274%) were noted. Significant decrease in HDL (45%), increase in TC (49.5%), TG (34.8%), LDL (106.8%) and VLDL (35%) were also observed in arthritic rats ($P < 0.001$). Treatment with alcohol extracts of Vatari Guggul, Pathyadya Churna and Shatpuspadya Churna brought significant improvements in all these parameters.

Conclusion & Significance: It is evident that arthritis has some connection with lipid metabolism and hemoglobin synthesis. The Ayurvedic formulations brought about holistic changes by arresting progression of arthritis, balancing lipid levels, improving RBCs and hemoglobin formation.

madhavii10@yahoo.co.in