ABSTRACT

India is rich with medicinal plant values of high where most of the medicinal plants were in need of investigation systematically at the level of phytochemistry to establish standardization. The main objective of the present work is to find out the treatment for arthritis from natural source which will ensure safety, efficacy, minimising adverse effects of chemicals and also cost effective.

The current work is to evaluate the antiarthritic activity of selected medicinal plants *Myxopyrum smilacifolium* Blume and *Pamburus missionis* Swingle. In ancient system of ayurvedic medicine it was compiled that leaves of *Myxopyrum smilacifolium Blume* and *Pamburus missionis Swingle* had antiarthritic activity but there is a lack of scientific evidence hence it made an advent to evaluate for their Antiarthritic activity. The leaves of the selected plants were subjected for pharmacognostical evaluation namely organoleptic characteristics, microscopical evaluation and physicochemical constants.

The leaves were blended to make powder after shade dried. The powder subjected for flourensence analysis in order to find out the behaviour of powder towards different reagents. The powder of leaves of *Myxopyrum smilacifolium Blume* and *Pamburus missionis Swingle* were mend for soxhletion by using different solvents Petroleum ether, chloroform and ethanol. The extracted solvents were examined for the presence of secondary metabolites. The ethanolic extract was considered for further study as more number of chemical constituents was present when compared to other solvent extracts. The fluorescence behaviour of extracts was examined. Acute toxicity studies were carried out according to OECD guidelines No. 423 (Organization of Economic Co-Operation and Development). The ethanolic extracts of leaves of both plants were found to be safe upto 2000mg/kg bodyweight and the dose levels were considered as 200 and 400mg/kg bodyweight.

Arthritis is controlled based upon two mechanisms of actions by suppressing inflammatory mediators and by suppressing the free radicals. The ethanolic leaf extracts of both the plants were subjected primly for antioxidant activity by using three models DPPH assay, NO assay and Hydrogen peroxide assay by using ascorbic acid as a standard drug. It had shown that the extract of leaves of both plants had shown significant antioxidant activity and comparatively ethanolic leaf extract of *Pamburus missionis Swingle* had shown mere equivalent antioxidant activity as that of standard.
Both the leaf extracts were subjected for anti-inflammatory activity by Carrageenan induced paw edema using albino Wistar rats weighing about 150-200 g. The rats were examined for inflammatory parameters namely paw edema, paw thickness and knee diameter for 28 days and all the parameters were compared to the rats treated with standard drug Diclofenac sodium 15mg/kg and control group. It was observed that both the leaf extracts at dose of 400mg/kg had shown significant anti-inflammatory activity and comparatively 400mg/kg leaf extract of Pamburus missionis Swingle had shown equivalent to that of standard drug. In cotton pellet granuloma method, 400mg/kg of ethanolic extract of *Myxopyrum smilacifolium* Blume had shown significant activity compared to the ethanolic extract of Pamburus missionis and standard drug.

Further both the leaf extracts were examined for Antiarthritic activity by using Complete Freunds Adjuvant Induced arthritis model. The inflammatory, heamotological, biochemical parameters were examined along with radiological analysis. All the parameters for were studied for 28 days after induction of arthritis by CFA. Inflammatory parameters viz., paw edema, paw thickness and knee diameter had shown increase until 7th day, after 14th day there is a control over these parameters were observed. Haematological parameters viz., RBC, WBC, ESR, RA factor had profoundly changed during the treatment of course from 14th day until 28th day. The SGOT and SGPT levels were decreased in blood levels on 28th day. Further the recovery of inflammation in rat joints were examined clearly by taking off x-rays and it revealed reduction of inflammation in joints when analysed radiologically.

The extracts were subjected for isolation by using column chromatography and the elutes were made run out for thin layer chromatography. The scrapped off portion of developed spot on TLC plates were subjected for spectral analysis IR, NMR and Mass spectroscopical methods. The results were revealed that the compound isolated from ethanolic leaf extract of both *Myxopyrum smilacifolium* and Pamburus missionis may be of irridoid glycoside and Apigenin respectively. From the results that both the plants namely *Myxopyrum smilacifolium* Blume and *Pamburus missionis* Swingle had shown good significant Antiarthritic activity where it leads to the development of new molecule from natural sources for the treatment of arthritis which would be safe and cost effective.