Chapter- 7

SUMMARY, CONCLUSION AND FUTURE SCOPE

Summary

Evaluation of antiarthritic activity of *Myxopyrum smilacifolium* and *Pamburus missionis* had been carried out systematically in scientific manner.

The origin for possessing the plants had made when the salicylates were isolated from the plant *Salix alba* which are known as first generation of compounds where their mechanism of action is suppressing the inflammatory mediators and the second generation of compounds which are of synthetic origin were discovered and currently the investigations were progressed on numerous plants where could find the lead molecules to cure arthritis.

An extensive literature review was made on investigations of Antiarthritic activity of plants and it was found that two plants namely *Myxopyrum smilacifolium* and *Pamburus missionis* were selected to evaluate their antiarthritic activity as the investigational findings are not exploited much.

This study was designed for prime to subject pharmacognostical standardization, isolation of the compounds and screening of antiarthritic activity in order to provide scientific evidence.

The leaves of *Myxopyrum smilacifolium* and *Pamburus missionis* were analysed for pharmacognostical, phytochemical and pharmacological aspects. The morphological and organoleptic characteristics were provide the correct identification of leaves of *Myxopyrum smilacifolium* which shown they are green, simple, reticulate venation, petiolate, and elliptical in shape where *Pamburus missionis* shown greeny leaf, simple and oblong-ovate in shape with aromatic odor and taste. Microscopy of *Myxopyrum smilacifolium* had revealed the presence of lignified phloem fibres, sclereids, tetracytic stomata which is glandular capitates type embedded in epidermal cells, collateral vascular bundles, prominent midrib with reticulate venation and squarish epidermal cells with thick cuticle. Microscopy of *Pamburus missionis* had
shown anamocytic stomata with unicellular trichome, lignified xylem vessels, palisade parenchyma and the surface view shown the presence of secretary cavities and the venation is of reticulate type. In quantitative microscopy, the width and the length of fibres were measured along with this the leaf constants namely stomatal index, stomatal number were shown more in upper epidermis comparative with lower epidermis in both the plants. Vein termination number and vein islet number also measured for both the plants. Fluorescence analysis for the both the plants were also reported, to find out the presence of chromopore in the particular species. Any deviation in the parameters values reported in the current work is a sign of adulteration or substitution of the drug.

The evaluation of these parameters helps in establishing the standardization of both plants pharmacognostically and these identifications of pharmacognostical parameters establish the primes report in regard for identifying both the plants for the future purpose.

The extraction for the leaves of Myxopyrum smilacifolium and Pamburus missionis were extracted by soxhlet apparatus by using the solvents chloroform, petroleum ether and ethanol. The ethanolic extract were chosen for further studies as it shown high positivity towards the chemical constituents’ examination.

The pharmacological activity of ethanolic extract of both the plants was carried out. Acute toxicity study of ethanolic extracts were observed safe upto 2000 mg/kg by acute toxicity study according to OECD guidelines 423. The invitro antioxidant studies of ethanolic extracts of both the plants in models namely DPPH assay, NO assay and H$_2$O$_2$ assay had shown the suppression of free radicals and comparatively ethanolic extract of Pamburus missionis had shown mere equitant to standard drug.

The In-vivo anti-inflammatory activity of both ethanolic leaf extracts were studied by Carrageenan induced paw edema and cotton pellet granuloma method using Wistar rats weighing about 150-200mg. Both the extracts were observed to suppress the inflammatory parameters at the dose of 400mg/kg than 200mg/kg and comparatively Pamburus missionis had shown good activity than Myxopyrum smilacifolium. The hematological parameters of both plants ethanolic extracts at the
dose of 400mg/kg was found to increase the Red Blood cell count and Hemoglobin content decrease in white blood cell count, erythrocyte sedimentation rate and rheumatoid antibody factor.

The In-vivo antiarthritic activity of both ethanolic leaf extracts of *Myxopyrum smilacifolium* and *Pamburus missionis* were examined by Complete Freunds Adjuvant model using Wistar rats weighing about 150-200mg at both doses of 200mg/kg and 400mg/kg. By the evaluation of inflammatory parameters, hematological parameters, biochemical parameters and radiological analysis both the extracts at 400mg/kg had shown the significant activity and comparatively 400mg/kg of *Pamburus missionis* had shown good antiarthritic activity.

Further ethanolic leaf extracts of *Myxopyrum smilacifolium* and *Pamburus missionis* were subjected for column chromatographical separation to isolate the compounds responsible for therapeutically purpose. Further Thin Layer chromatographic technique was performed for the elutes to identify the phytocconstituents in the extracts and further confirmation made by IR, Mass and NMR spectra. The identification of phytocconstituents were confirmed by presence of functional groups, molecular mass and presence of carbon atoms. The compounds were identified as Apigenin and an irridoid glycoside.

Further the test extract can be subjected for an additional investigation to get a well grounded addendum for the use of clinical purpose.

**Conclusion**

It can conclude that the pharmacognostical features evaluation, made helpful to correct identification of the plant and to make avoidance adulteration, to ensure quality assurance. The quantitative analysis of ethanolic extracts of *Myxopyrum smilacifolium* and *Pamburus missionis* had made revealed that high content of glycosides and flavonoids respectively. The ethanolic extract of *Myxopyrum smilacifolium* and *Pamburus missionis* shown troth in antioxidant, anti-inflammatory and antiarthritic activity dose dependent due to the presence of high content of glycoside and flavonoids respectively. Further the ethanolic extracts of both plants
were made subjected for isolation by column chromatography and elutions were collected. The collected elutions were made identified by using thin layer chromatography. Further the scrapped portion of developed spot in thin layer chromatography was made subjected for Infrared, Nuclear Magnetic Resonance and Mass spectroscopy inorder to find the constituents present in the respective extracts and it was found to be Myxopyroside and Apigenin.

**Future Scope**

An Additional work must be carried out to in areas of

- To find out the pure component
- Mechanism of action for isolated compounds
- To perform clinical trials
- Development of polyherbal formulation.
- Recommended for the examination of medicinal claims for assessing clinical use.