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INVITRO ANTI ARTHRITIC ACTIVITY OF MARKETED SIDDHA FORMULATION –RUMAGESIC CAPSULE

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ABSTRACT

Rumagesic Capsule is a Siddha medicine which is used as anti-arthritic agent. The aim of the present work is to compare and evaluate the *Invitro* anti-arthritic activity of marketed siddha formulation Rumagesic capsule at different concentration with standard Diclofenac sodium by Bovine serum albumin method. The maximum percentage inhibition of protein denaturation membrane stabilization of test (methanolic extract) and standard were observed as 83.69% and 87.38% respectively at 500µg/ml.

KEY WORDS: Rumagesic Capsule, Antiarthritic acitivity, Diclofenac sodium.

INTRODUCTION

Herbal drugs constitute a major part in all the traditional system of medicine. Herbal medicine is a triumph of popular therapeutic diversity[1].The factors responsible for the continued and extensive use of herbal remedies in India are their effectiveness, easy availability, low cost, comparatively less toxic effects and shortage of practitioners of modern medicine in rural areas[2]. Number of synthetic medicines has been derived from medicinal herb. With the emerging worldwide interest, in adopting traditional practices, in the healthcare systems by exploiting there potential, the evaluation of the botanicals in these systems of medicine in India is utmost essential. The development of these traditional systems of medicines with the perspectives of safety, efficacy and quality will help not only to preserve this traditional heritage but also to rationalize the use of natural products in the health care[3, 4]. Rheumatoid arthritis is an autoimmune disease in which there is joint inflammation, synovial proliferation and destruction of articular cartilage[5]. An inflammatory

reaction, increased cellularity of synovial tissue and joint damage are the pathological hallmarks of Rheumatoid arthritis[6]. Though conventional treatment options for this condition have improved in terms of effectiveness, the use of non-steroidal anti-inflammatory drugs (NSAIDs) like etoricoxib, disease modifying anti-rheumatic drugs (DMARDs) like methotrexate, sulphasalazine, leflunomide, hydroxychloroquine, and corticosteroids like prednisolone, methylprednisolone have all been associated with adverse effects. Because of this reason, patients suffering from chronic musculoskeletal disorders are likely to seek alternative methods for symptomatic relief and are amongst the highest users of complementary and alternative medicine[7].It is a common disease having peak incidence in 3rd to 4th decades of life with 3-5 times higher preponderance in female[8]. Its prevalence depends upon age[9]. Standardization is a system to ensure that every packet of medicine that is being sold has the correct amount and will induce its therapeutic effect. In this aspect standardization of herbal formulation is essential in order to assess the quality of drugs[10]. In this present work we have taken Rumagesic capsule (Fig.2) a marketed siddha formulation used for the treatment of anti-arthritis to evaluate their property as there was no evidence for their therapeutic effect from the literature. Therefore an initial attempt has been made to standardize Rumagesic capsule based on their anti-arthritic activity.

MATERIAL AND METHOD

Sodium chloride, Potassium chloride, Disodium hydrogen phosphate, Potassium dihydrogen phosphate, Bovine serum albumin and HCl acid was procured from Merck, Qualigens and Sigma Aldrich. Diclofenac sodium 50mg and Rumagesic Capsule 500mg was procured from the local market.

Preparation of reagents

5% Bovine serum albumin (BSA) - Dissolved 5g of BSA in 100ml of water.

Phosphate buffer saline pH 6.3 - Dissolved 8g of sodium chloride (NaCl), 0.2g of potassium chloride (KCl), 1.44g of disodium hydrogen phosphate (Na_2HPO_4) and 0.24g of potassium dihydrogen phosphate (KH_2PO_4) in 800ml distilled water. The pH was adjusted to 6.3 using 1N HCl and make up the volume to 1000ml with distilled water. Test **so**lution- 0.45ml of Bovine serum albumin and 0.05ml of test solution of various concentrations Test control solution- 0.45ml of bovine serum albumin and 0.05ml of distilled water. Product control solution-0.45ml of distilled water and 0.05 ml of test solution Standard solution- 0.45ml of Bovine serum albumin and 0.05ml of Diclofenac sodium of various concentrations.

IN VITRO ANTI-ARTHRITIC ACTIVITY

Inhibition of protein denaturation method: [11, 12]

Method

0.5ml of Test solution, Test control solution, Product control solution, Standard solution was prepared. Various concentrations (100,250, 500 and 750µg/ml) of test dugs and standard drug diclofenac sodium (100,250, 500 and 750µg/ml) were prepared. 1N HCl was used to adjust the pH to 6.3 for all the above solutions. The samples were incubated at 37°c for 20 minutes and the temperature was increased to keep the samples at 57°c for 3 minutes. After cooling, 2.5 ml of phosphate buffer was added to the above solutions. The absorbance was measured at 416nm. The control represents 100% protein denaturation. The percentage inhibition of protein denaturation can be calculated as

Percentage Inhibition

100 – [{(optical density of test control – optical Density of product control)/optical density of test solution} × 100

The control represents 100% protein denaturation

RESULTS AND DISCUSSION

In vitro anti-arthritic activity the production of auto antigen in certain arthritic disease may be due to denaturation of protein, membrane lysis and proteinase action. The mechanism of denaturation probably involves electrostatic hydrogen, hydrophobic and disulphide bonding. From the results the maximum percentage inhibition of protein denaturation of test (methanolic extract) and standard were observed as 83.069% and 87.38% respectively at 500µg/ml as shown in table.1 and from figure.1

CONCLUSION

The Rumagesic capsule a marketed siddha formulation showed potent anti-arthritic activity. Evaluation of the anti-arthritic activity of this formulation was the initial step of the standardization of this capsule. In future complete standardization will be performed.

Table.1: Effect of Rumagesic capsule and standard on inhibition of protein denaturation

DRUG	CONCENTRATION (µg/ml)	% INHIBITION
Test	100	47.23
	250	69.47
	500	83.69
	750	74.63
Standard	100	58.96
	250	73.75
	500	87.38
	750	77.05

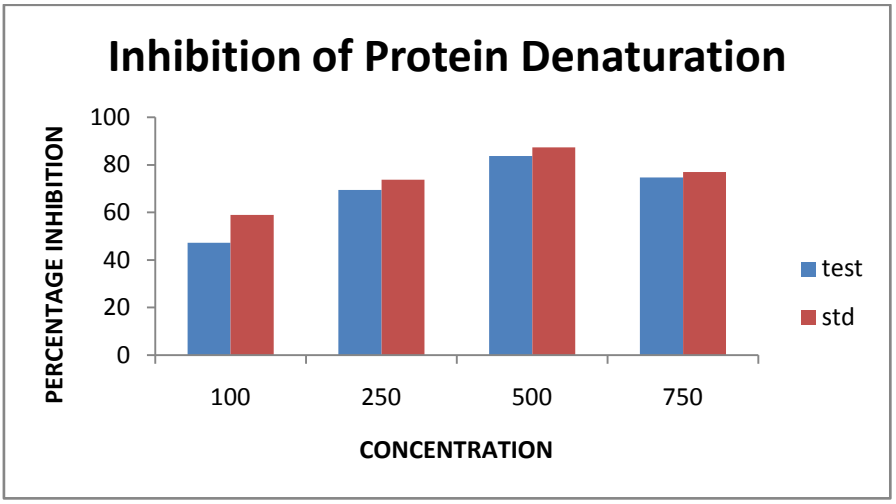

Fig.1: Influence of Rumagesic capsule and standard on inhibition of protein denaturation

Fig.2: Rumagesic Capsule

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