ISSN: 2231-6078
INTERNATIONAL JOURNAL OF DRUG DISCOVERY AND HERBAL RESEARCH (IJDDHR)
2(3): July–September: (2012), 446-455

Research Article

Correlation Studies on the Amount of Sulphur in Arthritic Joint Effusion and its Association with Modern and Traditional Medicinal System

Avni Karvat and Hemlata Bagla *

1. Department of Nuclear and Radiochemistry, Kishinchand Chellaram College, Churchgate- 400020, India

Abstract

Sulphur contributes substantially in joint tissue and fluid metabolism. Therefore, the present investigation has been carried out to establish the correlation between the levels of sulphur in the joint fluids of arthritis patients consuming Antiarthritic Ayurvedic Drugs (AAD) or allopathic medicines.The subject population has been divided on the basis of allopathic and Antiarthritic Ayurvedic Drug (ADD) treatment. Arthrocentesis has been adopted to tap the knee joint effusion from arthritis patients. Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) has been used for estimating the levels of sulphur in the biological fluid samples.

It has been established that the arthritic joint fluids contained lower levels of sulphur than controls. Further, it has been evaluated that the patients under the therapy of AAD formulation had significantly altering level of mean sulphur concentration than those under allopathic drug therapy.The screening of sulphur in joint effusion can offer a sensitive and early diagnostic aid in arthritis patients. Also, the study clearly implicated the superior restoration competence of ayurvedic medicine in regaining the appropriate levels of sulphur as compared to allopathic drugs.

Key Words: Bursal fluid, Sulphur, Allopathic medicine, Antiarthritic ayurvedic drug, ICP-AES.

Introduction

Amongst the most broadly identified joint diseases are Osteoarthritis (OA), Rheumatoid arthritis (RA) and Bursitis(B). Sulphur has known to play a major role in joint tissue and fluid metabolism. Also, it assists in the synthesis of Glucosamine and Chondroitin sulphate, a major component in the formation, resiliency and repair of cartilage tissues[1]. Therefore, the estimation of sulphur becomes essential in order to recognize its potential perspective in aetiology of arthritis.

There has been a subsequent line of research reporting variation in the levels of sulphur in synovial fluid from patients with joint trauma, inflammatory arthritis and non-inflammatory arthritis[1-4]. Further, it has been observed by Samantha et.al that the sum of chondroitin sulphate disaccharide concentrations in OA and RA joint fluids was significantly lower than those in normal fluids[5].

***Corresponding Author**
Email: hemabagla@gmail.com
Phone: +919821420698.

The concentration of sulphur in arthritic cartilage has been shown to be about one-third the level of normal cartilage[6] . O.Donald.et al has illustrated elevated sulphate in joint effusion of degenerative arthritis and decreased concentration in RA compared to serum sulphate[7]. Literature reports marked deficiency of sulphur existing in chronic arthritis, demonstrated by lowered content of cystine in fingernails[8].

It has been reported that the sulphur containing compounds present in herbal plants act as scavengers of reactive oxygen species, and they function as an anti-inflammatory agent[9,10]**.** Hence, the present work utilizes indigenous medication in order to evaluate its therapeutic effect by estimating the alteration in concentration of sulphur in joint fluid of arthritis patients. In addition to that an analogue study was conducted to inspect the efficacy of allopathic drugs in comparison to ayurvedic medication.

Besides, in the consideration of identifying the suitable therapeutic strategies by investigating the amount of element, it is important to adopt a good analytical technique which is devoid of too much chemical interference. Since, there are very few tools for studying the role of sulphur in biological systems; among them Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) offers a unique non-destructible facility for determining the concentration of element in biological fluids.

Thus, the current study confers the role of sulphur in arthritic joint fluid and examines the difference in the concentration of sulphur in OA, RA and Bursitis patients. Also, the search for better therapy was essential, which might influence the levels of sulphur in different disease processes as led us to distinguish ayurvedic and allopathic medicinal system. The study can be a first step in establishing a relationship between elemental content and restorative potential of effective medicinal system.

Material and Method

All the chemicals of A.R. grade were obtained from Lennetech Laboratory (Mumbai). Distilled, deionized water was used for analytical purposes. Nitric acid (HNO_3) and Perchloric acid ($HClO_4$) used for sample digestion were of Suprapur grade (Merck, Germany).

Study population

The subjects assessed for research were patients with OA, RA and Bursitis with knee joint associated with clinically detected joint effusion. The patients with arthritic disorder were diagnosed on the basis of the criteria laid down by