

**ROLE OF FOXO PROTEIN IN OSTEOARTHRITIS AND ITS TREATMENT: GAME CHANGER IN THE FIELD OF RHEMATOLOGY**<sup>1</sup>Dr. Asra Iqbal, <sup>2</sup>\*Dr. Syed Zawahir Hassan, <sup>3</sup>Dr. Marium Naeem Billoo and <sup>4</sup>Dr. Mahum Nadeem<sup>1,2,3</sup>Dow University of Health Sciences, Karachi, Pakistan.<sup>4</sup>Sharif Medical and Dental College, Lahore, Pakistan.

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**ABSTRACT**

Osteoarthritis is the most common age related disease affecting older individual. Most commonly it involves weight bearing joints in human. Reduced expression of FOXO proteins has been found to be associated with development of osteoarthritis.

**KEYWORDS:** Osteoarthritis, FOXO proteins, osteoarthritis.**INTRODUCTION**

Osteoarthritis or degenerative joint disease is the most common disease associated with aging. This age related disease is characterized by breakdown of cartilaginous tissues which are found in between joints and act as shock absorber. The most common sites of body affected by this disease are knee joint, hip joint and hand joint.

It is believed to be the most common type of arthritis as it affects more than 30 million adults in the United States.

According to previous study conducted in human and mice which shows decrease expression of FOXO proteins to be the main factor responsible for occurrence of osteoarthritis in human. There are three types of FOXO proteins and it was found that FOXO1 and FOXO3 proteins are expressed in the superficial and middle zone of human cartilage and they are responsible for strengthening the superficial and middle zone of cartilage. With aging there expression is reduced and this could be the cause of osteoarthritis in human.

In addition to this in mice FOXO proteins also protect against the effects of free radicals which is responsible for causing destruction of cartilage. FOXO proteins also enhance production of lubricin which is a protein which protects against the wear and tear mechanism in cartilage tissues.

Scientists also found that boosting the levels of FOXO proteins could play a major role in enhancing bodies protective mechanism which could play a major role in reducing development of osteoarthritis.

Therefore, further studies should be conducted in which there should be development of drugs which should enhance and boost expression of FOXO levels and these can be given to aged individual prophylactically so there would be least likely development of osteoarthritis in them.

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