



Pharmacological screening of ethanolic extract of *Pithecellobium dulce* for antiarthritic activity in Rats

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Arthritis is an inflammatory joint disorder in which cartilage of the joint is gradually lost and categorized by swelling of joints, pain, and loss of function. The present study was conducted to explore the antiarthritic activity of ethanolic extract of *Pithecellobium dulce* against formaldehyde induced at sub plantar region of the left hind paw during days 1 and 3 of the study period. The changes observed in paw diameter during the study period, various biochemical, and haematological parameters were monitored. The Radiographic analysis and histopathology significantly improved after treatment with test extract *P. dulce* (250 mg/kg, b.w., p.o.) as compared to the standard treatment with indomethacin (10 mg/kg, b.w., p.o.). The results of the current investigation concluded that ethanolic extract of *P. dulce* possesses significant anti-arthritis activity against formaldehyde induced arthritis model, justifying its therapeutic role in arthritic conditions. The observed antiarthritic activity may be due to the presence of phytoconstituents such as alkaloids and flavonoids. *P. dulce* significantly suppressed the paw oedema in formaldehyde models ($P < 0.001$). The Histopathological and radiographic studies of joints also showed a protective effect of *P. dulce*.

Keywords: Ethanolic extract, Formaldehyde, Joint disorder, Phytoconstituents, Radiographic studies.

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Introduction

Arthritis is an inflammatory joint disorder in which cartilage of the joint is gradually lost or an auto-immune disease by which the immune system of the human body assaults its own tissues. It is categorized by swelling of joints, pain, and loss of function. Osteoarthritis (OA) and rheumatoid arthritis (RA) are the most common arthritis. In the United States, they affect more than forty-five million individuals and are the topmost reason for physical inability among younger age. OA is a progressive non-inflammatory disorder that causes pain and limited joint movement due to loss of joint ligament. It is due to an association of old age, obesity, joints irritation, weakness of muscle and wearing down by friction. They are also called 'wear and tear' arthritis. It is a synovial joints disorder in which articular cartilage which is known for weight-bearing weakens and new bones form at the border of the joint and in the sub-

chondral region. Unlike RA, OA disturbs articular ligament, while the membrane of the synovial joint often becomes swollen late in the disease. Two main differences between OA and RA are that OA disturbs the bigger joints like knees, hips because of wear and tear, while RA first attacks minor joints and later damages the cartilage. OA is the most common reason for hip knee replacement surgery¹⁻⁵.

RA is a chronic progressive inflammatory auto-immune disorder by which the defence mechanism of the human body attacks its own cartilage and joints lining. It not only affects synovial joints but also many other sites including the heart blood vessels and skins. In the female, RA is more common than male. The exact cause of RA is not yet clearly known but the progression of autoimmunity might be initiated by infection due to microbes, probably by viruses in hereditarily susceptible individuals. The main symptoms of RA are synovial membrane inflammation. If it is not treated, then the synovial membrane become thickens and synovial fluid accumulation occurs. It causes tenderness and pain and formed irregular granulation

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