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Research Article.....!!!

**INVESTIGATION OF ANTI-ARTHRITIC ACTIVITY OF ETHANOLIC  
LEAF EXTRACT OF *TEPHROSIA PURPUREA* (LINN) PERS****DR.S. SENTHILKUMAR**

Karur, Tamilnadu, India.

**KEYWORDS:**

*Tephrosia purpurea*, Anti  
arthritic activity, Ethanol,  
Low dose, High dose.

**For Correspondence:****DR.S.SENTHILKUMAR.****Address:**

Karur, Tamilnadu, India.

**ABSTRACT**

The word arthritis means inflammation of the joint. Rheumatoid arthritis (RA) is a ravaging inflammatory and autoimmune illness that affects the joints. Although its causes is still unknown, with RA, inflammation manifestrs in the lining of the joining cause pain, swelling, joint damage and deformity. It can occasionally involve other internal organs. Such as the nerves, eyes, lungs or heart. The earliest symptoms of RA can be non-specific, including felling unwell or tired soreness in or around joints, low-grade fever, and weight loss/poor appetite. As time goes on RA can involve more and more joints on both side of the body. As a consequence, researchers are now searching for alternative therapeutics.

**INTRODUCTION:**

Arthritis is one of the most common chronic inflammatory disorders, foremost cause of disability in world wide. There are more than 100 different types of arthritis and related conditions. Out of which rheumatoid arthritis and osteoarthritis are the major ones. Most of the diseases of joints affect synovial joints. Symptoms of one type of arthritis are unlike other type. Some people may show mild but some are with strong symptoms. Some of the common symptoms are: pain, edema of joints, rigidity, tenderness, redness, warmth, loss of flexibility, bone spurs, discomfort when standing or walking fatigue (1,2,3,).

Traditional use of medicine is identified as a way to learn about potential future medicines. Because of wide biological and medicinal values, high safety margins and lesser cost of herbal medicine, it has great demand and used as source of basic health care in both developed and developing countries (4,5). Who notes that around 200 pharmaceutical medicines are derived from the plant, in modern medicinal system around 74% of which used in ways that can directly correlated to their ancient medicinal uses (4,5).

**MATERIALS AND METHODS:****COLLECTION OF PLANT MATERIAL:**

The leaves of *Tephrosia Purpurea* were collected from paramathi near karur District in Tamilnadu.

**PREPARATION OF PLANT EXTRACT:**

The leaves of *Tephrosia Purpurea* were shade dried at room temperature. The dried material was then homogenized to obtain coarse powder and stored in air-tight bottles for further analysis. The shade, dried, powderd leaves were extracted with ethanol by hot extraction using soxhlet apparatus, collected and stored in a vial for further analysis.

**PROCEDURE:**

Wister albino male rats (150-200g) were divided into T groups of six animals each (n=6). Group I served as control. Arthritis was induced in raty by injecting 01.ml of 0.1% freund's complete adjuvant (FCA), (Sigma Aldrich USA) into the sub planter region in the right hint paw of group II-IV rats on the first day of the experiment . Group III was administrated with indomethacin (10mg Kg<sup>-1</sup> day<sup>-1</sup> P.O) daily for 15 days which serred as the standard reference. Group IV and V was administrated with 200mg kg<sup>-1</sup> day<sup>-1</sup> P.O and 400 mg kg<sup>-1</sup> day<sup>-1</sup> P.O of ethanolic leaf extract of *Tephrosia Purpurea* daily for 15 days (4).

**EXPERIMENTAL DESIGN:**

The plant extract treatments were administered as follows for 5 days

Group-I : Served as control

Group-II : Freund's complete adjuvant (FCA) in to the sub planter region in the right hind paw.

Group-III: Adminstrated with Indomethacin (10mg kg<sup>-1</sup> day<sup>-1</sup> P.O) daily.

Group-IV: 200mg kg<sup>-1</sup> day<sup>-1</sup> P.O of *Tephrosia Purpurea*.

Group- V: 400mg kg<sup>-1</sup> day<sup>-1</sup> P.O of *Tephrosia Purpurea*.

The increase in joint diameter was measured daily starting from day 1, by using verniar caliber.

Percentage protection rendered by the plant extract is calculated using the formulae

$$\frac{\text{Difference in paw volume of Induced} - \text{difference in paw volume of standard / or treated}}{\text{Difference in paw volume of Induced}} \times 100$$

Percentage Protection = -----

Difference in paw volume of Induced

**STATISTICAL ANALYSIS:**

The data presented here are means  $\pm$  SD of 6 rats in each group. The results were analysed using one-way analysis of variance (ANOVA) and the group means were compared by Duncean's multiple range test (DMRT) using statistical program for social sciences (SPSS Version 16.0) software for windows. The findings were considered statistically significant at  $P < 0.05$  (5).

**RESULTS AND DISCUSSION:**

The therapeutic strategies are reduction of inflammation with non steroidal anti inflammatory drugs (NSAIDS) often results in relief of pain for significant period. The gluco corticoids also have powerful anti inflammatory effects when first introduced were considered to be ultimate answer to treatment of inflammatory arthritis (8,9). Another important group of agents are characterised as slow acting anti rheumatic drugs (SAARDS) or disease modifying anti rheumatic drugs (DMARDS). They may slow bone damage associated with rheumatoid arthritis and are thought to affect more basic inflammatory mechanism than do the NSAIDS (Table 1,2 ). Basically NSAIDS causes noted side effects like peptic ulcer. Plant based compounds have been used in place of above drug which has very less side effects and also cost effective (10).

TABLE-1 Antiarthritis activity of Ethanolic leaf extract of *Tephrosia purpurea*

Paw volume (mm)					
Days	Control	Induced	Standard	Low dose	High dose
0	3.28±0.16	3.15±0.12	3.40±0.08	3.23±0.12	3.33±0.32
1	3.28±0.16	6.96±0.24	6.60±0.21	7.33±0.49	7.43±0.34
2	3.28±0.16	7.45±0.23	7.27±0.14	7.51±0.41	7.23±0.29
3	3.28±0.16	7.95±0.02	7.83±0.06	7.66±0.41	7.05±0.32
4	3.28±0.16	8.60±0.09	8.38±0.09	7.91±0.39	6.84±0.33
5	3.28±0.16	9.32±0.05	8.16±0.04	8.11±0.37	6.64±0.32
6	3.28±0.16	9.92±0.04	7.89±0.05	8.01±0.35	6.44±0.31
7	3.28±0.16	10.25±0.09	7.73±0.06	7.90±0.38	6.20±0.44
8	3.28±0.16	10.77±0.04	6.89±0.10	7.76±0.39	6.11±0.44
9	3.28±0.16	11.44±0.08	6.52±0.12	7.55±0.37	6.00±0.42
10	3.28±0.16	11.85±0.06	6.52±0.12	7.43±0.37	5.92±0.40
11	3.28±0.16	11.25±0.07	6.15±0.05	7.23±0.33	5.81±0.39
12	3.28±0.16	10.73±0.06	5.73±0.06	7.01±0.33	5.76±0.37
13	3.28±0.16	10.11±0.04	5.43±0.06	6.79±0.35	5.72±0.37
14	3.28±0.16	9.85±0.08	5.25±0.08	6.59±0.38	5.56±0.38
15	3.28±0.16	9.31±0.08	5.11±0.04	6.44±0.31	5.54±0.12

Values are expressed as mean ± SD (n=6)

TABLE-2 Percentage protection of *Tephrosia purpurea* against FCA induced arthritis

Groups	Initial paw volume volume (mm)	Fomal paw volume volume (mm)	Difference	Percentage protection (%)
Control	3.28 ± 0.16	3.28 ± 0.16	-----	-----
Induced	3.15 ± 0.12	9.30 ± 0.08	6.15 ± 0.19	-----
Standard	3.40 ± 0.08	5.11 ± 0.05	1.71 ± 0.09	72.20
Low dose	3.23 ± 0.12	6.44 ± 0.31	3.20 ± 0.33	47.93
High dose	3.33 ± 0.32	5.54 ± 0.12	2.21 ± 0.30	64.16

Values are expressed as mean ± SD (n=6).

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