

## Original Research Article

# To study the efficacy of Rhus tox in management of cases of osteoarthritis of knee joint

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### ABSTRACT

**Background:** Arthritis and rheumatism are among the commonest forms of chronic disease and, with an aging population, are set to become commoner still. Strictly speaking, arthritis means disease of the joints, while rheumatism is disease of the soft connective tissues which support and move the joints. There are many problems with current conventional treatment of arthritis and rheumatism. Although the new generation of NSAIDs is safer, they are only glorified painkillers, which do not affect the basic disease process. Similarly for rheumatoid arthritis, a range of powerful drugs is available but all of these have long and alarming lists of side effects. Thus the main aim of this research study is to prove the efficacy of Homoeopathy in managing cases of Osteoarthritis without any side-effects.

**Methods:** 30 cases were selected fitting the case definition. Age group of 45-79 years was chosen for the study. Inclusion and exclusion criteria were laid down. Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and Kellgren and Lawrence system of classifying the severity of knee-osteoarthritis were used to assess the severity and outcome.

**Results:** All the results were tabulated. Graphical presentation was made of all the observations. Scores before and after treatment was compared. It was found that there was vast difference in scores before and after treatment.

**Conclusions:** Rhus tox was found to be effective in managing cases of Osteoarthritis of Knee Joint.

**Keywords:** Arthritis, Rheumatism, Osteoarthritis, Osteophytes, NSAID's., WOMAC, Kellgren and Lawrence System

### INTRODUCTION

Osteoarthritis (OA) is a disease of the synovial joints where degeneration of joint tissue results in pain, stiffness, and impaired physical function.<sup>1,2</sup> Pain is the most prominent and disabling symptom of OA, resulting in reduced participation in activities and negative effects on mood, sleep, and overall quality of life.<sup>3,4</sup> OA can arise in any synovial joint in the body, but is most common in the hands, hips, knees and spine<sup>3-5</sup>

Knee OA results in the most severe disability and the knee is the joint most extensively studied in OA

research.<sup>5-7</sup> Although there is no standard definition for OA, it can be defined structurally or symptomatically.<sup>6-8</sup> Radiographic OA is used in research settings and is based on structural characteristics of the joint, including joint space narrowing (JSN), osteophytes, bone cysts, and sclerosis visualized on radiographs.<sup>9</sup>

The most common cause of osteoarthritis of the knee is age. Almost everyone will eventually develop some degree of osteoarthritis. However, several factors increase the risk of developing significant arthritis at an earlier age.<sup>10,11</sup>

### **Age**

The ability of cartilage to heal decreases as a person gets older.

### **Weight**

Weight increases pressure on all the joints, especially the knees. Every pound of weight you gain adds 3 to 4 pounds of extra weight on your knees.

### **Repetitive stress injuries and other illnesses**

People with rheumatoid arthritis, the second most common type of arthritis, are also more likely to develop osteoarthritis. People with certain metabolic disorders, such as iron overload or excess growth hormone, also run a higher risk of osteoarthritis.<sup>12</sup>

### **Diagnosis**

#### **X-rays**

X-rays, which can show bone and cartilage damage as well as the presence of bone spurs

#### **Magnetic resonance imaging (MRI) scans**

Doctors may use blood tests to rule out other conditions that could be causing the pain, such as rheumatoid arthritis, a different type of arthritis caused by a disorder in the immune system.<sup>13</sup>

The primary goals of treating osteoarthritis of the knee are to relieve the pain and return mobility. The treatment plan will typically include a combination of the following:

#### **Weight loss**

Losing even a small amount of weight, if needed, can significantly decrease knee pain from osteoarthritis.<sup>14</sup>

#### **Exercise**

Strengthening the muscles around the knee makes the joint more stable and decreases pain. Stretching exercises help keep the knee joint mobile and flexible.

#### **Pain relievers and anti-inflammatory drugs.**

#### **Injections of corticosteroids or hyaluronic acid into the knee.**

#### **Using devices such as braces**

There are two types of braces: "unloader" braces, which take the weight away from the side of the knee affected

by arthritis; and "support" braces, which provide support for the entire knee.

### **Physical and occupational therapy**

If you are having trouble with daily activities, physical or occupational therapy can help. Physical therapists teach you ways to strengthen muscles and increase flexibility in your joint. Occupational therapists teach you ways to perform regular, daily activities, such as housework, with less pain.<sup>15,16</sup>

The aim of this systemic review was to identify, evaluate and summarize the effectiveness of Rhus tox in management of pain in cases of OA.

### **METHODS**

In this study patients visited OPD are included in the study. A total of 30 cases of OA knee joint, which fit into the criteria of the diagnosis, were taken for the study. All these cases are recorded in L.S.M.C. format according to standardized case record.

#### **Inclusion criteria**<sup>9,10,11</sup>

1. Male or female. The recruitment goal is for approximately equal numbers of men and women
2. Ages 45-79. Enrollment goals will be specified for each decade of age within each gender
3. Subjects with symptomatic tibio-femoral knee OA at baseline are eligible if they have both of the following in at least one native knee at baseline:
  - Frequent knee symptoms in the past 12 months defined as "pain, aching or stiffness in or around the knee on most days" for at least one month during the past 12 months;
  - Radiographic tibiofemoral knee OA, defined as definite tibiofemoral osteophytes
  - grades 1-3 on the fixed flexion radiograph.
4. For those age 45-49, eligible participants will have frequent knee symptoms
  - defined above), or frequent use of medications for treatment of knee symptoms (defined below),
  - or infrequent knee symptoms (defined below); AND will have one or more other
  - eligibility risk factor (defined below).
5. For those age 50-69, eligible participants will have any of the following:
  - frequent knee symptoms, or frequent use of medications for treatment of knee symptoms, or be
  - overweight, or have two or more other eligibility risk factors.
6. For those age 70-79, eligible participants will have any of the following:
  - frequent knee symptoms, or frequent use of medications for treatment of knee symptoms, or one or

- more other eligibility risk factor.
7. The specific eligibility risk factor criteria for the Incidence will be:
    - Knee symptoms in a native knee in the past 12 months. Three definitions of knee symptoms during the past 12 months will be used as risk factors for eligibility purposes:
  8. frequent knee symptoms (as defined above for symptomatic knee OA);
  9. frequent use of medication to treat knee symptoms, defined as use of medications (all types) on most days of a month in the past 12 months (knee symptoms may be masked by the use of pain medications) and
  10. infrequent knee symptoms, defined as “pain, aching or stiffness in or around the knee” at any time in the past 12 months but not on most days for at least one month.
  11. Symptomatic knees without definite osteophytes have an increased risk of developing
    - radiographic OA compared to knees without symptoms.
  12. subjects with knee pain and no definite osteophytes developed radiographic OA at a rate of 5% per year (40% in subjects followed 8 years) (unpublished data) compared to 1-2% per year in all subjects.
  13. Overweight, defined using gender and age-specific cut-points for weight. Weight is one of the most potent risk factors for knee OA. Weight rather than BMI will be used to facilitate eligibility determination since the relationship to risk of knee
    - OA is similar for both variables.
  14. Knee injury, defined as a history of knee injury causing difficulty walking for at least a week. Serious knee injury is among the strongest known risk factors for knee OA. There will be no limits on the time since the injury or age at which it occurred as there is no conclusive evidence at this time that subjects with older injuries will be more or less likely to develop knee OA during the study than those with recent injuries.

#### **Exclusion criteria** <sup>6,7,8</sup>

1. Rheumatoid Arthritis (RA) or other types of inflammatory arthritis.
2. Flexion knee radiograph shows severe joint space narrowing or bone on bone in both the medial and lateral compartments of either knee without the presence of a definite tibio-femoral osteophyte in that knee.
3. Unlikely to demonstrate measurable loss of joint space during the study, defined as severe joint space narrowing (OARSI joint space narrowing grade 3 or bone-on-bone) in both knees on the baseline fixed flexion knee radiograph, or unilateral TKR and severe joint space narrowing in the other knee
4. Bilateral total knee joint replacement or plans to have bilateral knee replacement in the next 3 years.
5. Pregnancy

6. Unwilling to sign informed consent.

#### **Arthritis impact measurement scales**

##### *Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)*

This scale of measurement was used to assess pain, stiffness, and physical function in patients with hip and /knee osteoarthritis (OA).<sup>17</sup>

The WOMAC consists of 24 items divided into 3 subscales:

##### *Pain (5 items)*

During walking, using stairs, in bed, sitting or lying, and standing

##### *Stiffness (2 items)*

After first waking and later in the day

##### *Physical function (17 items)*

Stair use, rising from sitting, standing, bending, walking, getting in/out of a car, shopping, putting on/taking off socks, rising from bed, lying in bed, getting in/out of bath, sitting, getting on/off toilet, heavy household duties, light household duties.

##### *Scale*

The Likert Scale version uses the following descriptors for all items: none, mild moderate, severe, and extreme. These correspond to an ordinal scale of 0-4. The 100 mm visual analog version uses anchors of no pain/stiffness/difficulty and extreme pain/stiffness/difficulty.

##### *Score range*

On the Likert Scale version, the scores are summed for items in each subscale, with possible ranges as follows: pain=0-20, stiffness=0-8, physical function=0-68.

##### *Interpretation of scores*

Higher scores on the WOMAC indicate worse pain, stiffness, and functional limitations.

#### **Kellgren and Lawrence system of classifying the severity of Knee-osteoarthritis**

The Kellgren and Lawrence system is a method of classifying the severity of knee osteoarthritis (OA) using five grades.<sup>18</sup> This classification was proposed by Kellgren et al in 1957 and later accepted by WHO in 1961.<sup>2</sup>

**Classification**

- grade 0: no radiographic features of OA are present
- grade 1: doubtful joint space narrowing (JSN) and possible osteophytic lipping
- grade 2: definite osteophytes and possible JSN on anteroposterior weight-bearing radiograph
- grade 3: multiple osteophytes, definite JSN, sclerosis, possible bony deformity
- grade 4: large osteophytes, marked JSN, severe sclerosis and definite bony deformity.

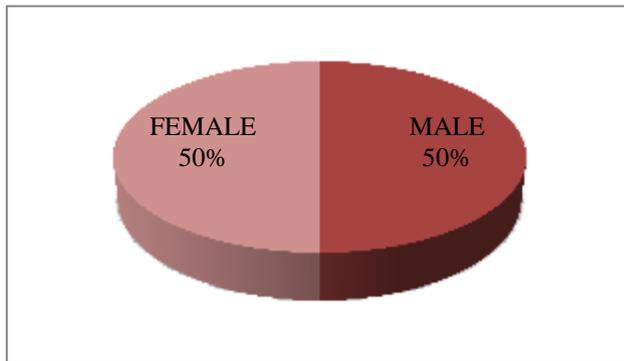
**Table 1: Scores before and after treatment.**

S. no	Clinical features			
	Before treatment	Scores	After treatment	Scores
1.	Presence of sign	3	Disappearance of sign	2
2.	Presence of symptom	2	Amelioration of symptoms	1
3.	Presence of pathology	4	Aggravation of symptoms	3
4.			Disappearance of pathology	4

Statistical analysis was done using paired t-test by comparing the scores before and after treatment.

**RESULTS**

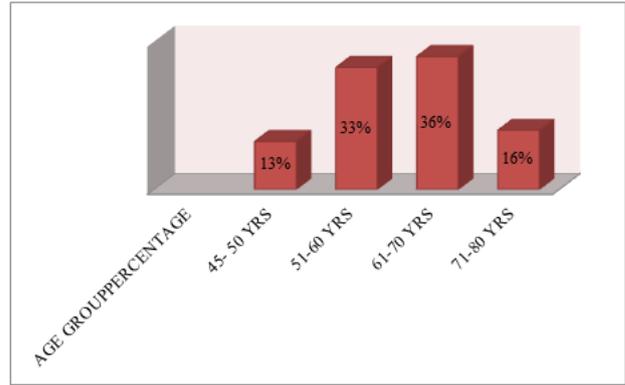
Of the thirty cases studied there were 15 males and 15 female i.e. 50% of males and 50% of females as shown in Figure 1.



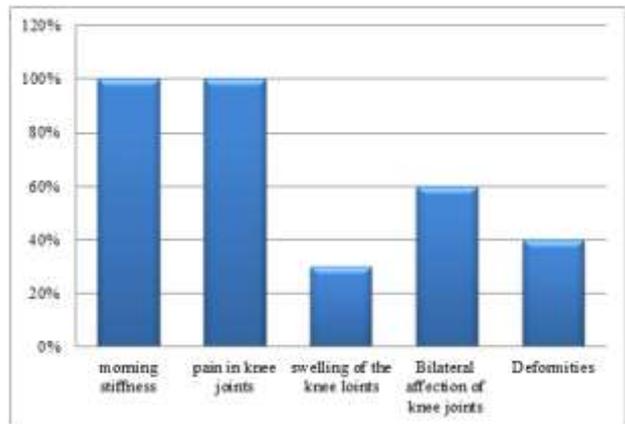
**Figure 1: Sex distribution.**

Of the thirty cases studied from the age group of 45-79years, the following was the age-wise distribution as in Figure 2.

Of the thirty cases studied the following clinical features were found to be occurring in the stated manner as given in Figure 3.



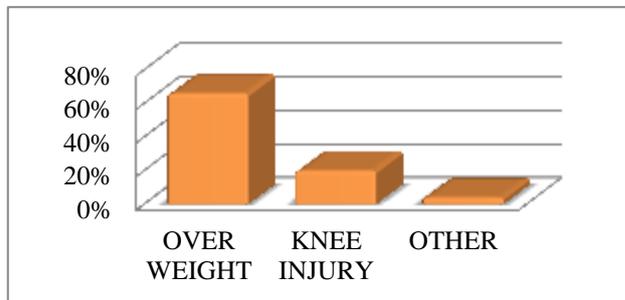
**Figure 2: Age group distribution.**



**Figure 3: Clinical features.**

Of the thirty cases studied radiological evidence was looked for in twenty one. Out of twenty one eighteen cases showed some form of radiological changes i.e. 85 % of the cases showed some form radiological change.

Of the thirty cases studied, causative factor was knee injury in six of the cases and overweight in twenty of the cases, i.e. 20% of the cases showed a knee injury as causative factor and 66% of the cases showed overweight as C/F as in Figure 4.



**Figure 4: Causative factors.**

Of the thirty cases studied, the right knee joint to get affected was five (17%), left was seven (23%) and

remaining 18 cases (60%) showed bilateral affection as shown in Figure 5.

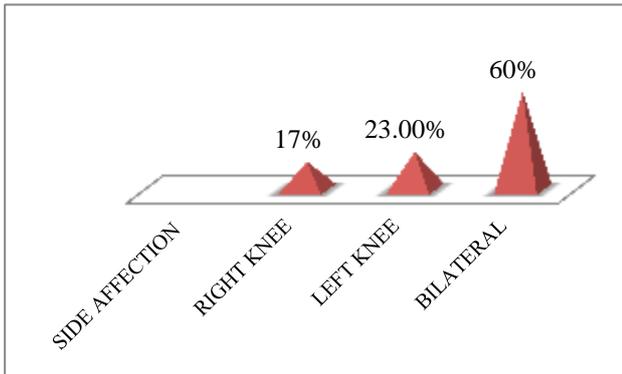


Figure 5: Side affection.

Of the thirty cases studied, 12 cases (30%) had associated complaint of hypocalcaemia, 11 (36.6%) cases have some side affected first, the cases showed some side to get affected first before bilateral affection occurs, 9 cases showed swelling around the affected knee joint, 24 cases showed some form of characteristic modality, which would aggravate or ameliorate the rheumatic process, i.e. 80 % showed some form modalities associated with OA.

The thirty cases were studied according to their clinical staging and the distribution was in the following manner:

- stage of early synovitis (Grade I)= 1 case = 3.33%
- stage of chronic synovitis(Grade II) = 21 cases = 70%
- stage of fibrosis(Grade III) = 8 cases = 26.66%

Of the thirty cases studied, 18 cases (80%) had reversible changes and twelve cases (40%) had irreversible changes.

Statistical working of the result was presented in Figure 6.

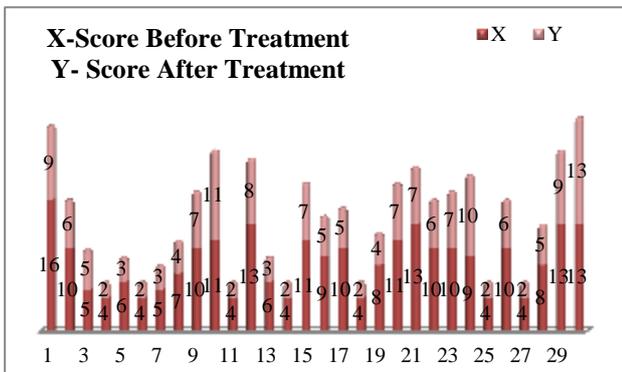


Figure 6: Distribution of scores before & after homoeopathic treatment.

Calculation used for estimating the use of Roh tox in OA.

$$\bar{A} = \frac{\sum A}{n} = 2.93$$

$$S = \sqrt{\frac{\sum (A - \bar{A})^2}{n-1}} = \sqrt{\frac{90.83}{29}} = 1.76$$

$$SE = \frac{S}{\sqrt{n}} = \frac{1.76}{\sqrt{29}} = 0.32 \quad t = \frac{\bar{A}}{SE} = \frac{2.93}{0.32} = 9.15$$

Thus t =9.15

At 5% level for 29 degrees of level of freedom the value of t = 2.05; at 1% level for 29 degrees of level of freedom the value of t = 2.76

Thus the value obtained is more than the above values so; we reject the null hypothesis and accept the alternative hypothesis. Therefore Rhus Tox is useful in OA of knee joint.

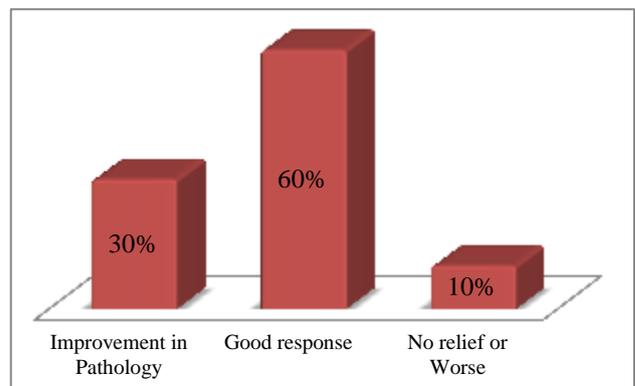


Figure 7: Study result.

## DISCUSSION

A systematic review identified RCT of oral homeopathic treatment of osteoarthritis conducted on participants with knee osteoarthritis. The trial investigated the efficacy of Rhus toxicodendron (given by mouth) in cases of OA of Knee in terms of pain, deformity etc.<sup>19,20</sup>

In the trial, a significant but similar reduction of pain was observed in the study groups. Participants who were given Rhus tox, reported a greater reduction in pain when walking and also showed reduction in the structural deformity as similar to the results of previous studies.<sup>21,22</sup>

In this study, the effectiveness of Rhus tox in the treatment of OA of the knee was evaluated over a time period of 12 months in 30 patients fulfilling the case definition and inclusion criteria. The evaluation was based on improvement with respect to signs, symptoms and pathology (if present) and, on the statistical verification the scores were taken before and after treatment. On the basis of these they were termed as:

- Improvement in pathology- 30%
- Good response- 60%
- No relief or worse- 10%

30 patients were studied over a period of 12 months were analysed for parameter of symptoms before homoeopathic treatment and improvement after homoeopathic treatment. 90% of cases lie in the bracket of cure and good response.

## CONCLUSION

Out of the total of 30 cases studies, 60% cases showed good response with Rhus tox. 30% cases showed great improvement in pathology. In none of the 30 cases, was there any acute complication. Total time duration required for complete eradication of symptoms was also greatly reduced with the help of Rhus tox. In cases 5, 12, 15, 16 and 21 respectively, where lower potency of Rhus tox failed to act, high potency hastened cure. Statistical analysis also shows that there is great difference in scores before treatment and after treatment. Therefore, according to the 30 cases we have studied, we can say that Rhus tox is very much useful in treatment of OA of knee joint. This inference is not only for statistical purpose but it gives us guidelines for prescribing in cases of OA. This will then be a feather in cap for Homoeopathy. This will also make people get over the myth that Homoeopathy takes very long to act and has little or no role in treating OA of knee joint.

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*Ethical approval: The study was approved by the institutional ethics committee*

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