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Original Research Article

Effect of cissus *quadrangularis* linn and *zingiber officinale* rosc in osteoarthritis patients

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ABSTRACT

Background: To evaluate the efficacy of Cissus *quadrangularis* Linn. or *Zingiber officinalis* Rosc. or in combination treatment of osteoarthritis which reduces joint pain, joint swelling and tenderness without risk of side effects.
Methods: Total 60 patients were selected and divided into 3 groups (each group consist of 20 patients); data were collected before and after treatment of following groups: Group A-Cissus *quadrangularis* linn-5gm; Group B-*Zingiber officinale* rosc-5gm; Group C-Treatment of Cissus *quadrangularis* linn combined with *Zingiber officinale* rosc-5 gm/dose twice a day with luke warm water.
Results: 60 % cases of joint pain were relieved at the end of the treatment in group B & C, in group A 50%, reduction in joint pain extremely significant in all groups A, B, C ($p<0.0001$). 'C' 80%, 'A' 15% and 'B'5% reduction in symptom of Joint swelling and which is very significant in group A, and group B ($p<0.001$) and extremely significant in group C ($p<0.0001$). Symptom of tenderness 'C' 90%, 'A' 85%, and 'B' 10% cases were relived from the complaint. The difference in tenderness is statistically extremely significant when compared between groups ($p<0.0001$).
Conclusions: Present study reveals that, significant reduction of joint pain, joint swelling and tenderness after treatment of Cissus *quadrangularis* Linn. or *Zingiber officinalis* Rosc. and extremely significant reduction of joint swelling and tenderness in combination therapy.

Keywords: Cissus *quadrangularis* linn, Osteoarthritis, *Zingiber officinale* rosc

INTRODUCTION

The World Health Organisation estimated that 80% of the population of developing countries rely on traditional medicines, mostly plant drugs, for their primary health care needs. In 1978, the World Health Organisation recognized Ayurveda as one of the forms of traditional medicine that could especially help in health care system in developing nations. Osteoarthritis is a degenerative non-inflammatory joint disease that results in pain and restricted movement of affected joints. It is a condition involving the breakdown of the protective cushion of the cartilage covering the ends of the bones where two bones meet to form a joint.[1]

Researchers are trying their level best for making drugs which can prevent or slow down or reverse joint damage. Allopathic treatment has got so many limitations in the

management of osteoarthritis with either conservative or surgical treatment which is highly symptomatic and with troublesome side effects like severe Gastritis, Nausea, Vomiting, sometimes ulceration of mucus membrane of stomach and damage to kidney and liver.[7] The role of Ayurveda for better management of osteoarthritis is highly appreciable in comparison to modern drugs. On searching Ayurvedic treatises two drugs were picked up for the study in the treatment of osteoarthritis. They are Cissus *quadrangularis* linn, Zingiber officinale rocs. The present study assesses the efficacy of Cissus *quadrangularis* Linn. or *Zingiber officinalis* Rosc. Or in combination treatment of osteoarthritis which reduces joint pain, joint swelling and tenderness without risk of side effects.

METHODS

The clinical study was carried out in total 60 patients in Department of Dravyaguna, S.V Ayurcedic Medical College, Tirupathi with treatment of Cissus *quadrangularis* linn powder and Zingiber officinale rocs powder in osteoarthritis patients. Study was conducted after obtaining the institutional ethical committee approval the period of 2015 to 2016.

The total patients were divided in to 3 groups (Groups-A, B, C), each group consists of 20 patients and data were collected before and after treatment of tested drugs. Three follow-ups were done at interval of 15 days.

Treatment groups

- Group A-Treatment of Cissus *quadrangularis* linn 5 gm/dose twice a day
- Group B-Treatment of *Zingiber officinale* rosc. 5 gm/dose twice a day
- Group C-Treatment of Cissus *quadrangularis* linn + *Zingiber officinale* rosc.5 gm/dose twice a day with luke warm water.

Inclusion criteria

- Patient's age group of 31-70 years was selected.
- Patient with osteoporosis and osteophytic changes.
- Obese patients.
- Patients with history of Trauma.
- Patients with Endocrine disorders mainly menopausal women.

Exclusive criteria

- Patients age below 31 and above 70 years
- Patients suffering from Carcinoma and psoriatic arthritis
- Patients suffering from Ankolysing arthritis
- Patients suffering from Poliomyalgia and Rheumatoid arthritis
- Patients suffering from Tuberculosis
- Patients suffering from Syphilitic arthritis.

RESULTS

Table 1: Showing distribution of patients having joint pain before and after treatment in three groups.

Joint pain	Score	Before treatment		After treatment	
		No.	%	No.	%
Group A	0	0	0	10	50
	1	3	15	8	40
	2	11	55	2	10
	3	6	30	0	0
Group B	0	0	0	12	60
	1	6	30	7	35
	2	10	50	1	5
	3	4	20	0	0
Group C	0	0	0	12	60
	1	6	30	8	40
	2	8	40	0	0
	3	6	30	0	0

0-Normal, 1- mild, 2- moderate, 3- severe

Table 1 shows marked reduction of joint pain in all groups. 60 % cases of joint pain were relieved at the end of treatment in group B and C. In group A 50% cases were relieved from the complaint after the treatment.

Table 2: Showing improvement of joint pain in three groups.

Joint pain	Before treatment mean±S.D.	After treatment mean±S.D.	Within the group paired' t' test value BT-AT	Mean difference	Between the group comparison one way Annova F value
Group A	2.15±0.6708	0.6±0.6806	T = 10.100 P <0.0001	1.550±0.6863	F = 0.6010 P = 0.5517 P > 0.05
Group B	1.9±0.7182	0.45±0.6048	T = 10.722 P <0.0001	1.450±0.6048	
Group C	2.0 ±0.7947	0.4±0.5026	T = 11.961 P <0.0001	1.600±0.5982	

Table 3: Showing distribution of patients having Joint swelling before and after treatment in three groups.

Joint swelling	Score	Before treatment		After treatment	
		No.	%	No.	%
Group A	0	3	15	6	30
	1	11	55	10	50
	2	3	15	4	20
	3	3	15	0	0
Group B	0	0	0	1	5
	1	8	40	9	45
	2	7	35	9	45
	3	5	25	1	5
Group C	0	5	25	16	80
	1	12	60	4	20
	2	2	10	0	0
	3	1	5	0	0

0-Normal, 1- mild, 2- moderate, 3- severe

Table 4: Showing improvement of joint swelling in three groups.

Joint swelling	Before treatment (BT) Mean ±S.D.	After treatment (AT) Mean ±S.D.	Within the group Paired' t' test value BT-AT	Mean difference	Between the group comparison one way Annova F value
Group A	1.300±0.9234	0.9000±0.7182	t = 3.559 p = 0.0010	0.4000±0.5026	F = 21.936 P <0.0001 extremely significant
Group B	1.850±0.8127	1.500±0.6882	t = 3.199 p = 0.0024	0.3500±0.4894	
Group C	0.9500±0.7592	0.2000±0.4104	t = 4.265 p <0.0002	0.7500±0.7864	

Table 5: Showing distribution of patients having tenderness before and after treatment in three groups.

Tenderness	Score	Before treatment		After treatment	
		No.	%	No.	%
Group A	0	4	20	17	85
	1	14	70	2	10
	2	2	10	1	5
	3	0	0	0	0
Group B	0	0	0	2	10
	1	8	40	10	50
	2	9	45	7	35
	3	3	15	1	5
Group C	0	4	20	18	90
	1	13	65	2	10
	2	3	15	0	0
	3	0	0	0	0

0-Normal, 1- mild, 2- moderate, 3- severe

Table 2 shows reduction in joint pain in all groups which is extremely significant in groups A, B, C ($p<0.0001$). Initial mean and SD reduced from 2.15 ± 0.6708 to 0.6 ± 0.6806 after three months treatment regimen in group A. Decrease in initial mean and SD was from 1.9 ± 0.7182 to 0.45 ± 0.6048 in group B. In group C, initial mean and SD declined 2 ± 0.7947 to 0.4 ± 0.5026 after taking 3-month therapy. Above data states that intergroup comparison was observed statistically not significant. Symptom of Joint swelling was evidently reduced in all the three groups, but group 'C' showed better results with 80% reduction in symptom of Joint swelling when compared to groups 'A' and 'B' (30% and 5%) (Table 3).

Table 4 showed reduction in Joint swelling in all groups which is very significant in group A, and group B ($p<0.001$) and extremely significant in group C ($p<0.0001$). Initial mean and SD 1.300 ± 0.9234 to 0.9000 ± 0.7182after three months treatment regimen in group 'A'. Decrease in initial mean and SD was from 1.850 ± 0.8127 to 1.500 ± 0.6882 in group B. In group C, initial mean and SD 0.9500 ± 0.7592 declined to 0.2000 ± 0.4104. The inter group comparison was statistically extremely significant ($p<0.0001$).

Table 5 shows that symptom of tenderness which was reduced in group A, B and C respectively. In group 'C' 90% cases were relived from the complaint while in group 'A' showed 85% relief from the symptom. In group 'B' 10% cases were relived from the complaint.

It is evident from the above table that mean ± SD before treatment and after treatment was 0.9 ± 0.5525, 0.2000 ± 0.5231 in group 'A'. In group 'C' it was 0.95 ± 0.6048 and 0.1000 ± 0.3078 which is extremely significant

(p<0.0001). The mean difference of tenderness before treatment and after treatment in group B was (1.750 ± 0.7164 and 1.350 ± 0.7452) 0.4000 ± 0.5026 which is very significant (p<0.001). The statistical difference within the group is significant in all three groups. The difference in tenderness is statistically extremely significant when compared between groups (p<0.0001) (Table 6).

Table 6: Showing improvement of tenderness in three groups.

Tenderness	Before treatment (BT) Mean ± S.D.	After treatment (AT) Mean±S.D.	Within the group Paired' t' test value BT-AT	Mean difference	Between the group comparison one way Annova F value
Group A	0.9±0.5525	0.2000±0.5231	t = 6.658 p <0.0001	0.7000±0.4702	F = 31.342 P <0.0001 extremely significant
Group B	1.750±0.7164	1.350±0.7452	t =3.559 p = 0.0010	0.4000±0.5026	
Group C	0.95±0.6048	0.1000±0.3078	t = 7.768 p <0.0001	0.8500±0.4894	

DISCUSSION

Osteoarthritis is a disorder characterized by progressive destruction of articular cartilage and prevalence of nearly 22% to 39% in India.[2] It is development of a chronic inflammatory proliferation of the synovial linings of diarthrodial joints, which leads to aggressive cartilage destruction and progressive bony erosions.[1,3] It may be supposed to be triggered by the combination of genetic susceptibility and environmental factors.[4] The pathophysiology in osteoarthritis of inflammatory mediators, biomechanical changes with age and metabolic factors. Osteoarthritis is the major disability in patients characterized by episodes of pain, stiffness, loss of function and disability to perform day to day activities and its signs of tenderness and joint swelling.[5,6] Generally the treatment of osteoarthritis in pharmacological view provides symptomatic relief with non-steroidal anti-inflammatory drugs such as Acetaminophen, Aspirin, Diclofenac, selective COX-2 inhibitors, but these drugs are producing gastrointestinal side effects as well as produce cardiac adverse effects treated with selective COX-2 inhibitors.[7,8] Ginger is one of the most commonly used natural plant products in various inflammatory disease conditions, especially in treatment of osteoarthritis. It has been observed that, earlier animal experiments as well as human studies proved ginger has good property of relieving inflammatory symptoms in patients of osteoarthritis. The anti-inflammatory action of ginger is due to inhibition of COX-1, COX-2 and LOX.[9-11] In addition it is also inhibits several cytokines, chemokines and inducible enzyme COX-2, thus providing strong evidence of ginger modulates in chronic inflammation.[12-14] Present study demonstrated that, significant reduction of joint pain, joint swelling and tenderness after treatment of *Cissus quadrangularis* Linn. or *Zingiber officinalis* Rosc. and extremely significant reduction of joint swelling and tenderness in treatment of combination therapy. Further studies need extend to clarify machanisms of Cissus *quadrangularis.*

CONCLUSION

Present study reveals that, significant reduction of joint pain, joint swelling and tenderness after treatment of Cissus *quadrangularis* Linn. or *Zingiber officinalis* Rosc. and extremely significant reduction of joint swelling and tenderness in combination therapy.

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