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Original Article

Assessment of analgesic property of Ciccus Qudrangularis in the patients of bone fracture by using visual analogue scale

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ABSTRACT

Cissus quadrangularis has been used by ancient period for promotion of fracture healing and well known as "Hadjod". A vast drug review shows that this drug also possess analgesic activity. Various animal studies reports are available over this analgesic and anti-inflammatory activity of drug Cissus quadrangularis. The analgesic effect of this plant when used in bone fractures may be of great value in relief of pain which is a constant feature in these cases. As it compared well with acetyl salicylic acid in its analgesic response, the nature of its chemically active constituents needs to be explored .The pain VAS is a unidimensional measure of pain intensity which has been widely used in diverse adult populations. Our main purpose was to evaluate the analgesic property of this drug in patients of bone fracture having pain and secondary objective was to prepare a scientific, valid document over analgesic property of present drug in terms of visual analogue score. It is seen that drug Cissus quadrangularis has significant impact over pain in terms of VAS so it can be used as analgesic agent in various painful conditions.

Keywords: fracture, bhagna, asthishrunkhala, visual analogue scale, hadjod

INTRODUCTION

Cissus quadrangularis (Linn) has been used by common man in India for promotion of fracture healing and well known as "Hadjod". It is a common perennial climber, which is distributed throughout India particularly in tropical regions. It requires warm tropical climate and propagated by stem cuttings in months of June and July. It is a climbing herb, tendrils simple, opposite to the leaves, leafless when old. Leaves simple or lobed, cordate, broadly ovate or reniform, serrate, dentate, sometimes 3-foliate and glabrous. Flowers small, greenish white, bisexual, tetramerous, in umbellate cymes, opposite to the leaves. Calyx is cup shaped. Fruit globose or obovoid fleshy berries, succulent, very acrid, dark purple to black, one seeded; seeds ellipsoid or pyriform. Stem is buff colored with greenish ting, dichotomously branched, sub-angular, glabrous, fibrous and smooth. Photochemical screening of *Cissus quadrangularis* revealed high contents of ascorbic acid, carotene, anabolic steroidal substances, and calcium. The stem contains two asymmetric tetracyclic triterpenoids, and two steroidal principles. The presence of β-sitosterol, δ-amyrin, δ-amyrone, and flavanoids (quercetin) having different potential metabolic and physiological effects has also been reported**. 1.**

Drug (*Asthishrunkhala)* review
Latin name : *Cissus quadrangularis*
CLASSIFICATION:

Kingdom	: Plantae
Division	: Magnoliophyta
Class	: Magnoliopsida
Order	: Vitales
Family	: Vitaceae
Genus	: Cissus

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Species : quadrangularis

Synonymes:

Sanskrit: Asthisamhara; *Vajravalli* **English:** Edible stemmed vine**; Hindi:** Hadjod; **Marathi:** Kandavela; **Kannada:** Mangroli; **Tamil:** Pindayi. **Punjabi-** Haddjor **Oria-** Hadbhanga**, Gujrati-** Vedhari **, Tamil** -Perandi **, Telugu**- Nalleru.

Habitat: in hot areas of India and Sri-Lanka.

Guna: Laghu, Ruksha.**Rasa:** Madhura. , **Veerya**: Ushna. , **Vipaka:** Madhura.

Dosha karma: Kaphaghna, Vataghna, Pitta-vardhana.

Parts used: Kanda, Patra.**Dosage:** Svarasa: 10 to 20 ml, Churna 10 mg per day.

Analgesic activity: The analgesic effect of the drug as observed in animal study by Haffner's The effect lasted for about 4 hrs. Cissus quadrangularis exhibited significant analgesic activity compared to that of Aspirin when tested using Haffner's clip and Eddy's hot plate methods. The extract was found to be effective by both oral and i.p. routes significantly ($P<0.001$) and reaction time was found to be increased by both methods. The duration of analgesic activity was from 2 to 4 hr and optimum effect was observed at 1/20th-1/10th of LD50 dose. The extract compared well with Acetylsalicylic acid. The analgesic effect of this plant when used in bone fractures may be of great value in relief of pain which is a constant feature in these cases. As it compared well with acetyl salicylic acid in its analgesic response the nature of its chemically active constituents needs to be explored.

Anti-inflammatory activity: On review Studies have revealed that, CQ exerted inhibitory effect on the oedema formation in animal model. It has been observed that flavanoids, several flavones, flavonols, flavanols and flavanonols are inhibitors of lipoxygenase, especially luteolin which is one of the compounds found in *C. quadrangularis*. In this regard, it has been previously shown that at least flavonoid, one of the major components of *C. quadrangularis*, inhibits the inflammatory process. Furthermore the anti-inflammatory activity of β sitosterol was also demonstrated which is another active constituent of *C. quadrangularis. The result of the study confirmed the finding that C. quadrangularis have an* inhibitory effect on edema induced by both carrageenin and arachidonic acid. Taken together, it is evident that both cyclooxygenase and lipoxygenase pathways of arachidonic acid metabolism are inhibited by *C. quadrangularis*. *Cissus quadrangularis* constitutes one of the ingredients of an Ayurvedic preparation, 'Laksha Gogglu', which has been proved to be highly effective in relieving pain, reduction of swelling and promoting the process of healing of the simple fractures as well as in curing the allied disorders associated with fractures. It acts by preventing the conversion of arachidonic acid to inflammatory prostaglandins. Recently anti-inflammatory activity assay of *Cissus* extract was performed. Cyclooxygenase is a key enzyme in the prostaglandin biosynthetic pathway, which is important in the inflammatory process. The ability to inhibit the COX-1 activity was used to evaluate the anti-inflammatory activity of *Cissus* extract. The anti-inflammatory activity of the extract was expressed as the percentage of inhibition of prostaglandin synthesis using a COX-1 assay.

Fracture (Bhagna): General features of kanda-bhagna mentoined by Sushruta includes *Svayathu bahulyam* (Marked swelling) *Sparsha asahishnutvam* (Tenderness)**,** *Avapidyamane Shabda* (Crepitus) ***Vividhavedanapradurbhavah*** (Different types of pain): the fractured bone before its reduction and immobilization produces variety of pain. This depends on the nature of trauma, bone fractures, displacement of the fragments and nature of soft injury. ***Sarvasu avasthasu na shramalabha*** (Inability to get comfort in any position): the fracture gives pain and discomfort to the patient until it is immobilized.**4** The discomfort is such that patient keeps resting the fractured part, in a single posture, does not produce any movement, as this would give rise to the pain. Again Fracture is said to be healed when there is No swelling or hardness on palpation, Absence of shortening and deformity, *Painless and comfortable movements. So this description indicates the importance of pain assessment in fracture healing **5**.* The analgesic effect of this plant when used in bone fractures may be of great value in relief of pain which is a constant feature in these cases.

METHODOLOGY:

Study Type : Interventional
Purpose : Treatment
Control : placebo controlled
Timing : Prospective
No. of Groups: Two
Sample Size : 40 in each group

Patients of uncomplicated bone Fracture were the subjects
Assesment criretia was pain in tearms of VAS
Objective:- To evaluvate the analgesic property of ciccus quadrangularis
Purpose of study was evaluation of ayurvedic drug for pain relief in fracture patients to minimise the load of analgesic drug and its adverse effect.

Drugs

For Group A (Treated group)	For Group B (controlled Group)
1.Drug - Asthishrunkhala churna 2. Dose – 10 gm in three divide doses 3. Route of administration – orally 4. Vehicle – Luke warm water 5. Duration- 30 days.	1.Drug-Starch (placebo therapy) 2.Dose – 500mg 3. Route of administration – orally, 4. Vehicle – Luke warm water 5. Duration- 30 days.

VAS scale: The pain VAS is a continuous scale comprised of a horizontal (HVAS) or vertical (VVAS) line, usually 10 centimeters (100 mm) in length, anchored by 2 verbal descriptors, one for each symptom extreme Instructions, , the scale is most commonly anchored by "no pain" (score of 0) and "pain as bad as it could be" or "worst imaginable pain" (score of 100 [100-mm scale])

DISCUSSION

Present trial design was based on conventional methodology used for single blind clinical controlled trial. Patients of uncomplicated bone Fracture were the subjects for this study. Total 96 patients were screened for study. Out of them 12 patients are excluded with proper referral as they did not fit in inclusion criteria, whereas 04 patients are withdrawn from study due to protocol voidance with irregular follow-up. They were advised for alternative treatment. 80 patients were enrolled and taken-in for the trial assessment in the study. They were divided into two groups with simple random allocation method, Group A(Treated Group)- treated with *Asthishrunkhala churna* orally. Group B- (Control group) treated with placebo Starch capsule. Observations were made during and after the treatment, to find out the analgesic property of drug *Ciccus quadrangularis* in terms VAS (visual analogue scale)

VAS Scoare was assessed on every follow-up Effect on clinical parameter pain in terms of VAS at different time points reveals that Mean±SD of VAS in Group A (Treated Group) was 10, 5.05± 0.31, 2.76 ±0.97 & 0.12± 0.33. at baseline , 7^{th} ,21^{st} and 31^{st} Day respectively. In Group B (Control Group) it was 10, 5.57 ±1.41, 3.57± 0.59 & 0.72 ±0.45 at baseline, 7^{th}, 21st and 31^{st} Day respectively.

On Comparison of change in VAS at day 7^{th}, 21^{st} and 31^{st} day from baseline between 2 groups by wilcoxon Rank sum test reveals that at day 7^{th} mean change of VAS in Group A was 4.95± 0.31 and 4.42± 1.41 in group B .this difference has not statistically significance. (P= 0.5110, NS). On day 21^{st} mean change of VAS in Group A was 7.32± 0.97 and in group B it was 6.42± 0.59 it reveals that there is significant reduction in pain as per VAS in group A on compared with Group B (P <0.0001,HS i.e. highly significant) . On day 31^{st} 21^{st} mean change of VAS in Group A was 9.87± 0.33 and in group B it was 9.27± 0.45 .indicates that there is significant reduction in pain as per VAS in group A on compared with Group B (p=<0.0001, HS i.e. highly significant).This shows Relief from pain is seen relatively earlier in Group A (Treated group) than in group B (Control group) in spite minimal use of concomitant medication .This may be due to drug *Cissus quadrangularis* has potent analgesic anti-inflammatory property.

Need of concomitant medication is documented for outcome assessment for this diclofenac sodium was used .observation revels that 27(33.75 %) patients in treated Group was required concomitant medication while in controlled Group 39-(48.75 %) patients were required concomitant medication. Average concomitant medication dose required in Group A is 2.37± 1.27 and in Group B 6.10 ±1.95.this difference was found to be statistically significant(P<0.0001,HS).It shows that group A patients are required considerably less concomitant medication than patients in group B. This may be because of drug *Cissus quadrangularis* has a analgesic property anti-inflammatory. Thus with use of *Ciccus quadrangularis we* can reduce the analgesic medication load and also we can keep away the patient from adverse effects of analgesic drugs.

Incidence of any adverse events reveals that In Group A There are no adverse event was observed but in Group B 17.5 % patients had common adverse event i.e. mild abdominal pain / Epigastric pain due to use of excessive Concomitant drugs. Adverse events were more common in group B as compared to group A (fisher exact test , p<0.0001, HS i.e. highly significant).The under trial drug *Cissus quadrangularis* has a gastroprotective property so the incidences of epigastric pain or abdominal pain are less or none in Treated group as compared to Control group. Incidence of Study drug related adverse events and Incidence of painful conditions exacerbations shows, there are none incidences of drug related adverse events and Incidence of painful conditions in both group. This

shows drug *Cissus quadrangularis* can be used safely without adverse effects.

CONCLUSION

In spite of lack of use of herbal remedies for pain in fracture patients lot of references regarding drugs which may act on pain were available in Ayurvedic texts. *Cissus quadrangularis* is a pharmacological agent for pain relief. Drug *Cissus quadrangularis* has analgesic property so it can reduce the load of analgesic drugs used in fracture management. Drug *Cissus quadrangularis* can be easily prepared and can be safely administered orally without any serious or adverse effects.

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