WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
Coden USA: WJPRAP Impact Factor 8.63
Volume 15, Issue 18, 933-942. Case Study ISSN 2277–7105

WHEN LEAF MEETS FLAME: AGNIKARMA WITH ARKA PATRA FOR CHRONIC LUMBAR SPONDYLOSIS—A CASE REPORT

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Article Received on 15 August 2026,
Article Revised on 05 Sept. 2026,
Article Published on 16 Sept. 2026,

https://doi.org/10.5281/zenodo.22768913

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How to cite this Article: Dr Amit Kumar Singh*[1], Prof. Dr. Deepali Sundari Verma[2] (2026). When Leaf Meets Flame: Agnikarma With Arka Patra For Chronic Lumbar Spondylosis—A Case Report. World Journal of Pharmaceutical Research, 15(18), 933–942.

ABSTRACT

Background: Lumbar spondylosis is a degenerative spinal condition commonly associated with chronic low back pain and functional limitation. In Ayurveda, its clinical features may be interpreted in relation to *Katigraha* and *Gridhrasi*. *Agnikarma* is a parasurgical procedure involving the controlled application of therapeutic heat. This report describes the short-term clinical outcome of Agnikarma performed using *Arka patra* as an intermediary medium. **Case Presentation:** A 52-year-old woman presented with a three-year history of low back pain radiating to the left gluteal region. MRI demonstrated an L4–L5 disc bulge with left foraminal encroachment. She received five sittings of Agnikarma at three-day intervals. Pain intensity and functional disability were assessed using an 11-point Numerical Rating Scale (0–10) and the Roland–Morris Disability Questionnaire, respectively. **Results:** Pain intensity decreased from 7/10 at baseline to 2/10 after treatment, while the RMDQ score decreased from 14/24 to 4/24. The patient also reported improved mobility and resumption of household activities. Transient erythema and mild self-limiting itching were observed; no serious adverse event occurred. **Conclusion:** This single case showed short-term improvement in pain and functional disability following Agnikarma with *Arka patra*. The findings are preliminary and cannot establish treatment efficacy. Controlled studies with standardised protocols and longer follow-up are required.

KEYWORDS: *Agnikarma*; *Arka patra*; *Calotropis procera*; lumbar spondylosis; *Katigraha*; low back pain.

INTRODUCTION

Low back pain (LBP), clinically associated with lumbar spondylosis, remains one of the most common musculoskeletal disorders encountered globally. According to the Global Burden of Disease Study, LBP is the foremost cause of years lived with disability (YLD) in numerous countries. In India, the prevalence is exacerbated by occupational strain, demographic ageing, sedentary behaviour, and limited access to structured rehabilitation services. Despite the availability of pharmacological analgesics, physiotherapy, and surgical options, a considerable proportion of patients experience inadequate relief or develop adverse effects from long-term medication use, renewing interest in evidence-based traditional therapies.[1,2]

Ayurveda provides a comprehensive framework for understanding spinal disorders. Conditions such as *Katigraha* (lumbo-sacral stiffness), *Gridhrasi* (sciatica-like radiation), and *Prishtashula* (back pain) are recognised as clinical correlates, all stemming from the vitiation and localisation of *Vata dosha* in the *kati pradesha* (lumbar region). Among the *Anushastra karma* (parasurgical procedures) enumerated in *Sushruta Samhita*, *Agnikarma* holds a pre-eminent position for disorders arising from aggravated *Vata* and *Kapha*.[3]

[illegible]

(A condition cauterised by fire does not recur; therefore, Agnikarma is considered superior.)
— *Sushruta Samhita*, Sutrasthana 12/3

Classically, *Agnikarma* involves the application of a heated metallic probe (*Shalaka*), iron rod (*Loha shalaka*), or organic conducting medium to a pathological focus to deliver controlled thermal energy. The use of *Arka patra*—the fresh leaf of *Calotropis procera* Linn. (family: Apocynaceae)—as a conducting medium introduces both thermotherapeutic and bioactive pharmacological effects. *Arka* is characterised in Ayurvedic pharmacopeia as *Tikshna* (penetrating), *Ushna* (thermogenic), and *Vata-kaphahara* (alleviating *Vata* and *Kapha*), properties ideally suited for *Vata*-dominant musculoskeletal conditions.[4]

Although the theoretical foundation for this intervention is well-established in classical texts, peer-reviewed clinical documentation of *Agnikarma* with *Arka patra* specifically for lumbar spondylosis remains limited. This case report aims to address this gap by presenting a structured clinical narrative and outcome-based analysis of a single patient treated with this protocol, evaluated using standardised instruments in a real-world clinical setting.

CASE REPORT

Patient Profile and Examination

A 52-year-old female homemaker presented with a chief complaint of persistent lumbar pain radiating to the left gluteal region of three years' duration, with gradual worsening over the preceding six months. Pain was aggravated by prolonged standing, cold exposure, and strenuous activity, and partially relieved by local warmth—findings consistent with *Vata* predominance in Ayurvedic assessment. General examination revealed a moderately built, conscious, and oriented individual. Systemic examination showed no cardiopulmonary or hepatosplenic abnormalities. Spinal examination demonstrated localised tenderness at the L4–L5 intervertebral level with bilateral paraspinal muscle spasm, restricted lumbar flexion, and a positive straight leg raise (SLR) test at 40° on the left side.

MRI of the lumbo-sacral spine confirmed a mild disc bulge at L4–L5 with left-sided foraminal encroachment, without evidence of cord compression. Routine blood investigations, including blood sugar and renal and hepatic function tests, were within normal limits. Ayurvedic assessment established the patient's *Prakriti* as *Vata-pittaja* with currently vitiated *Vata dosha* and *Vishamagni* (irregular digestive fire).

Informed Consent: Written informed consent was obtained from the patient for treatment and publication of the anonymised clinical details and accompanying images.

Table 1: Patient Profile and Clinical Parameters.

Parameter	Detail
Name	Mrs. X (Anonymised)
Age	52 years
Sex	Female
Occupation	Homemaker
Chief Complaint	Low back pain radiating to left gluteal region
Duration	3 years (chronic, recurrent)
Prakriti	*Vata-pittaja*
Vikrit Dosha	*Vata* predominant
Agni	*Vishamagni*

Bala	*Madhyama*
Nadi	*Vata-pittaja*
Pain Score (Pre)	7/10
Pain Score (Post)	2/10
RMDQ Score (Pre)	14/24
RMDQ Score (Post)	4/24

Rationale for *Arka Patra*

Calotropis procera, known in Sanskrit as *Arka*, *Mandara*, or *Alarka*, is a well-documented medicinal plant in Ayurvedic Materia Medica. Its *patra* (leaf) possesses documented *Vedanasthapana* (analgesic), *Shotha-hara* (anti-inflammatory), and *Vedana-nashaka* (pain-relieving) properties. The leaf contains pharmacologically active secondary metabolites including calotropin, calactin, proceroside, flavonoids, and terpenoids, which exhibit anti-nociceptive and anti-inflammatory activity in preclinical studies. In *Agnikarma*, the fresh leaf serves as a thermal conductor that may deliver localised heat and potential transdermal bioactives to the affected site. *Charaka* places *Arka* among the herbs of the *Vidarigandhadi gana* for their *Vatahara* properties, and *Bhavaprakasha* describes the leaf as *Agni-deepana* (kindling digestive and metabolic fire), which parallels its role in stimulating local circulation.[5,6,7]

The therapeutic response may be related primarily to the local application of controlled heat, with possible contributions from the traditional properties of *Arka patra*. However, the extent to which phytoconstituents from the leaf penetrate the skin during this procedure has not been established. Therefore, the proposed pharmacological contribution should be regarded as hypothetical and requires experimental confirmation.

Procedure: *Agnikarma* with *Arka Patra*

The procedure was conducted in five sittings, each separated by a three-day interval, during which the patient observed complete rest of the lumbar region and avoided *Vata*-aggravating foods and activities. The step-by-step protocol was as follows.

Pre-procedural preparation: The patient was given a light warm meal (*Laghu ahara*) on the day of treatment. The lumbar region was cleaned with an antiseptic swab and dried.[8]

Positioning: The patient was placed in a prone position with a thin pillow under the abdomen to reduce lumbar lordosis.

Leaf preparation: Two fresh, intact *Arka patra* leaves were selected—medium-sized, free of damage. Their abaxial (lower) surface was lightly oiled with *Tila taila* (sesame oil) and stacked one over the other on the lumbar site corresponding to the maximum tenderness point.

Heating and application: The point for *Agnikarma* was determined by identifying the most tender location on the body surface. The point was covered with an *Arkapatra*, then a flaming cotton swab soaked in spirit was brought close to the covered point and kept on it until the patient felt a burning sensation up to their maximum tolerance. Care was taken to ensure normal patient sensitivity. The flame was not kept so long that the patient's skin got burnt. The flame did not come in direct contact with surrounding skin or any other body part. Thus, complications of the conventional *Agnikarma* method can be avoided by the modified *Agnikarma* method without compromising its effectiveness in relieving pain.[9]

Post-procedural care: The treated area was gently cleaned and a light coating of *Ghrita* was applied to the skin. The patient was observed for 15 minutes and instructed to avoid water contact with the area for six hours, to consume warm liquids, and to rest.[10]

Figure 1: *Agnikarma* procedure performed with *Arka Patra* (*Calotropis procera* leaf) showing the application of heated leaf over the tender lumbar point.

Outcome Measures

Pain intensity was assessed using the Visual Analogue Scale (VAS)[11], a validated 10-point numerical rating instrument where 0 represents complete absence of pain and 10 represents

the worst imaginable pain. Functional disability was measured using the Roland–Morris Disability Questionnaire (RMDQ), a 24-item self-reported scale for low back pain-related functional impairment. Both instruments were administered before the first sitting (Day 0) and 72 hours after the final (fifth) sitting (Day 18).

Treatment Timeline

Time Point	Clinical Details
3 years before treatment	Onset of recurrent low back pain
6 months before presentation	Gradual increase in pain severity
Day 0	Clinical examination, MRI review, baseline pain and RMDQ assessment; first Agnikarma sitting
Day 3	Second sitting
Day 6	Third sitting
Day 9	Fourth sitting
Day 12	Fifth sitting
Day 18	Final clinical assessment and outcome evaluation

RESULTS

Clinical Outcome

Following five sittings of *Agnikarma* with *Arka patra*, the patient demonstrated clinically meaningful improvement in pain intensity and functional disability. The pain score declined from 7/10 prior to treatment to 2/10 post-treatment, representing a 71.4% reduction in subjective pain intensity. The RMDQ score dropped from 14/24 to 4/24, indicating a 71.4% improvement in lumbar function and daily activity performance. The patient reported the ability to resume household activities—previously curtailed by pain—within two weeks of commencing treatment.

Clinically, repeat spinal examination on Day 18 revealed resolution of paraspinal muscle spasm, improved lumbar flexion (from approximately 50% of normal range to 80% of normal range), and a negative SLR test bilaterally. The patient reported improved sleep duration and quality, which she attributed to reduction in nocturnal back pain.

Safety Profile

No serious adverse events were recorded during or after any of the five treatment sittings. Two minor post-procedural observations were noted: transient erythema at the application site (resolving within two hours post-procedure) and mild itching after the second sitting (self-limiting, resolved within 24 hours without intervention). No blistering, scarring,

secondary infection, or neurological complications were observed. The patient's compliance with post-procedural instructions was complete across all sittings.

Patient-Reported Experience

On subjective feedback, the patient described each sitting as producing an initial sensation of sharp, penetrating heat that transitioned rapidly to a feeling of warmth and relief. She expressed satisfaction with the convenience of the procedure (conducted in an outpatient setting with no hospitalisation) and with the progressive reduction in pain with each successive sitting. No pharmacological analgesics were consumed during the treatment period.

Patient Perspective: The patient reported progressive relief in pain and improved ability to perform household activities following treatment.

DISCUSSION

Ayurvedic Pathophysiology of Lumbar Spondylosis

In the Ayurvedic clinical framework, lumbar spondylosis is most accurately mapped to *Katigraha* (lumbo-sacral stiffness) and *Gridhrasi* (sciatica-like radiation), both of which arise from the localisation of aggravated *Vata* in the *kati pradesha*. *Vata*, by virtue of its *Rooksha* (dry), *Laghu* (light), and *Chala* (mobile) properties, progressively desiccates the *Shleshaka Kapha* that normally cushions the intervertebral spaces, reducing their lubrication and causing the pain-spasm-immobility triad characteristic of chronic low back syndrome.

Mechanism of *Agnikarma*

Agnikarma exerts its therapeutic action through the direct application of controlled thermal energy (*Dahana*) to the site of pathology. The heat generated counteracts the *Rooksha* and *Sheeta* (cold) attributes of vitiated *Vata*, restoring the *Ushna* (warm) and *Snigdha* (unctuous) qualities necessary for normal *Vata* function.[12] From a biomedical perspective, the local hyperthermia may induce increased tissue perfusion, accelerated removal of inflammatory mediators, relaxation of spastic musculature, and modulation of nociceptive nerve signalling at the peripheral level. The *Sushruta Samhita* describes the therapeutic superiority of *Agnikarma* in selected conditions.[13]

Role of *Arka Patra* as Conducting Medium

The choice of *Arka patra* as the intermediate thermal conductor is based on classical descriptions. The leaf contributes pharmacologically active compounds according to

traditional texts. *Calotropis procera* contains calotropin, calactin, and proceroside, compounds with documented inhibitory effects on cyclooxygenase enzymes and inflammatory cytokine cascades in preclinical studies. When the leaf is heated, these bioactives may be driven transdermally into the sub-epidermal layers, achieving localised anti-inflammatory and analgesic effects simultaneously with the thermal stimulus. However, this proposed dual mechanism—physical thermotherapy plus pharmacological transdermosis—remains hypothetical and requires experimental confirmation.[14]

Furthermore, *Arka patra* is described in *Charaka Samhita* as belonging to the *Shothaghna* (anti-oedematous) category, and its specific application in musculoskeletal pain through *Pinda sweda* (poultice fomentation) is documented in regional Ayurvedic traditions. The present case extends this application to the *Agnikarma* paradigm, with promising results.

Limitations

As a single case study, the findings of this report carry inherent limitations in terms of generalisability and the absence of a control group. Blinding is not feasible in parasurgical procedures, and the placebo effect cannot be entirely excluded. The follow-up period of 18 days is insufficient to assess the durability of therapeutic response. The transdermal penetration of *Calotropis* bioactives under the conditions of *Agnikarma* has not been quantified and requires pharmacokinetic investigation. These limitations point towards the necessity of a well-designed randomised controlled trial with an adequate sample size and extended follow-up.

CONCLUSION

This case report describes improvement in pain and functional disability following five sittings of Agnikarma using *Arka patra* in a patient with chronic lumbar spondylosis. Because the report represents a single patient without a comparator and includes only short-term follow-up, the findings cannot establish efficacy or long-term safety. The intervention should be evaluated in prospective controlled studies using a standardised treatment protocol, predefined safety criteria, and extended follow-up.

The ancient wisdom of Ayurveda, as codified in the *Sushruta Samhita* and allied classical texts, continues to offer clinically applicable solutions for conditions where modern medicine faces therapeutic limitations or side-effect burdens. Wider adoption of *Agnikarma* with *Arka patra* warrants rigorous multicentre trials that can substantiate the promising outcomes

observed in this individual case and contribute to an evidence base that bridges classical Ayurvedic practice with contemporary clinical standards.

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