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AN OVERVIEW OF CERVICAL RADICULOPATHY AND ITS MANAGEMENT IN UNANI MEDICINE WITH SPECIAL REFERENCE TO WET CUPPING THERAPY

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ABSTRACT

Introduction

Aging plays a major role in the onset of cervical spondylosis and radiculopathy. Several acute and chronic symptoms start with neck pain and may lead to cervical radiculopathy. Currently, in conventional medicine, pharmacological and non-pharmacological therapies are being used for the management of cervical spondylosis and radiculopathy. However, they have certain unwanted side

effects. Hence, newer and safer treatment options with minimum or no side effects are to find out. Unani system of medicine serves several gentle and holistic ways of treatment which may provide a new and better management of cervical spondylosis and radiculopathy.

Methods

We searched articles for neck pain, cervical spondylosis, radiculopathy etc. from various databases, including PubMed, Google Scholar, and MEDLINE. We also searched these topics in the books of Unani medicine.

Results

This review found out the modern as well as Unani perspectives of cervical spondylosis and cervical radiculopathy and also their management through various Unani therapeutic modalities. Unani system of medicines provides multiple modes of treatment with fewer side effects as well as it treat the cause of the disease.

Conclusion

Unani herbal drugs and non-pharmacological therapies of *'Ilāj bi'l Tadbīr* like venesection (*Faṣd*), *w*et cupping (*Ḥijāma), leech therapy etc.*, can be effective and safer options. However, their efficacy and safety should be scientifically evaluated through robust controlled clinical trials.

Keywords: Unani; Wet Cupping; Cervical Radiculopathy; Neck Pain; Cervical spondylosis

INTRODUCTION

Cervical spondylosis is a chronic degenerative process of the cervical spine that affects the vertebral bodies and intervertebral discs of the neck and may progress into disc herniation, bone spur formation and involvement of adjacent soft tissue structures, nerve root compression in the neural foramina and compression of the spinal cord **[1–5]**. Narrowing of intervertebral foramina and compression of spinal nerve results in radiculopathy and narrowing of the spinal canal results in spinal cord compression causing cervical myelopathy **[6]**. Degeneration of the disc, formation of osteophytes and spurs, shortening of the disc, vertebral subluxation all combine to cause narrowing of the spinal cord and intervertebral foramina **[7]**. Combined compression and inflammation of a spinal nerve may result in cervical radiculopathy **[8]**. Cervical spondylosis can initially be asymptomatic, or present itself through neck pain with or without neurological deficits. Symptoms of degenerative cervical spine disease can be outlined broadly into three clinical syndromes: (i) axial neck pain, (ii)

cervical radiculopathy, and (iii) cervical myelopathy; with patients commonly having a combination of these syndromes**[9]**.

Patients with cervical spondylosis with radiculopathy may complain of neck pain that may radiate up to the affected nerve root, neck rigidity, and restricted neck movements with pain including weakness, muscle wasting, and reflex impairment, vague numbness, tingling or weakness in upper limbs, dizziness, vertigo, and poor balance. Rarely, syncope, limited range of movement (forward flexion, backward extension, lateral flexion, and rotational to both sides) and minor neurological changes like inverted supinator jerks may also be present **[4]**.

METHODS

We searched articles for neck pain, cervical spondylosis, radiculopathy etc. from various databases, including PubMed, Google Scholar and MEDLINE. We also searched these topics in the books of Unani medicine available in Jamia Hamdard library like *Kulliyyāt-i-Nafīsī, Kitāb al-Taysīr*, *Uṣūl-i-Ṭibb*, *Sharḥ-i-Asbāb*. Other published books and journals were also consulted for further details on the topic.

PREVALENCE

Cervical spondylosis is a commonly diagnosed neurological condition frequently encountered in young adults. About 25% of people under the age of 40 show signs of spondylosis, which increases to 50% over the age of 40; and about 85% of people over the age of 60 years, have evidence of degenerative changes. The most frequently affected vertebra is C6-C7, followed by C5-C6. According to the Global Burden of Disease 2015, low back and neck pain are the fourth leading cause of disability-adjusted life years (DALYs) and the leading cause of years lived with disability (YLD) **[10]**. In some studies, the prevalence of cervical spondylosis has been estimated to be up to 89.7%, of which many patients have more severe symptoms from nerve root or spinal cord compression, resulting in radicular pain or myelopathy **[11]**. The prevalence of cervical radiculopathy has been estimated at 3.3 cases per 1000 with an average age-adjusted incidence rate of 0.8 cases per 1000 persons. The peak incidence of cervical radiculopathy is most frequently reported to occur in the fourth or fifth decade of life with an annual incidence of 2.1 cases per 1000 for this age group. There is general agreement that involvement of the C6 and C7 nerve roots secondary to lesions of the C5-6 and C6-C7 motion segments are most common. However, whether the C6 or C7 is the most commonly affected nerve root depends on the case series of patients

reported, with most favoring the C7 versus C6 level **[12]**.

PATHOANATOMY AND PATHO-PHYSIOLOGY

The primary cause related to the degenerative changes in cervical spondylosis is age-related. However, there are some spinal injuries to the disc that can lead to a degenerative process in the younger patient. A secondary manifestation of spondylosis is related to the compression of the vascular and neural structures contributes to the secondary manifestation of disease due to loss in the disc height and impinging osteophytes that lead to numbness, shock-like sensations, pain, and chronic motor and sensory effects, which if not treated may lead to permanent disabilities. The key pathophysiologic feature of radiculopathy is inflammation, which can result from acute herniation of an adjacent cervical disc that subsequently impinges on the nerve root **[13]**. Impingement of the nerve root by disc material likely leads to nerve damage both by mechanical and chemical pathways. Mechanically, compression of the nerve likely leads to localized ischemia and nerve damage. However, the chemical cascade triggered by the nucleus pulposus on the nerve is equally important. Disc degeneration and the local ischemia triggers a pro-inflammatory cascade mediated by tumor necrosis factor-alpha (TNF-α), interleukin factor-6 (IL-1β), and matrix metalloproteinases (MMPs). This cascade leads to further sensitization and increased pain in the area. Hence, it is not only the mechanical compression of the nerve root but also the inflammation around the nerve roots, responsible for radicular pain **[14,15]**.C-reactive protein is an acute-phase reactant, the levels of which rise dramatically during infection/inflammatory processes occurring in the body. This increment in CRP is due to a rise in the plasma concentration of IL-1β, which is produced predominantly by macrophages around the disc tissue **[15]**. This degenerative and inflammatory cascade leads to the biomechanical changes that can cause neural and vascular compression, pain, and loss of function.

A BRIEF INTRODUCTION OF UNANI SYSTEM OF MEDICINE

Unani (from the Arabic Yūnānī for 'Greek') is the ancient Greek system of medicine that evolved throughout the ancient world and which was fostered in the Islamic realms, based on ancient logic and timeless rules encapsulating a cosmological view of human health and the universe**[16]**. Hippocrates (c. 460-375 BCE), known as the father of this system of medicine and it is he who was the first true medical codifier and commentator of

the Unani system of medicine. In India, it is integrated into the national healthcare system and officially named Unani medicine**[17]**. Famous scholars of Unani medicine include Ibn Sīnā (Latinized as Avicenna, 980–1037 CE), Zakariyyā Rāzī (Latinized as Rhazes, 865–925 CE), Ibn Rushd (Latinized as Averroes, 1126–1198 CE), and many more **[16]**. It mainly focuses on four major elements of ancient Greek medicine, which include earth, fire, water, air, and four corresponding humors including phlegm (*Balgham*), blood (*Dam*), yellow bile (*Ṣafrā*) and black bile (*Sawdā*). According to Hippocrates a balance in the humors in the body indicates good health while a disturbance in their equilibrium results in disease **[18]**.

CERVICAL SPONDYLOSIS AND RADICULOPATHY IN UNANI MEDICINE

In Unani system of medicine, *Waja'* is an Arabic word that means perception of unease in the body caused by impaired temperament or loss in continuity **[19]**, and *Waja' al-Mafāṣil* is used to describe all kinds of joint disorders including pain, swelling, and stiffness. While there is no direct reference of Cervical spondylosis in Unani Medicine, the symptoms and signs described under *Waja' al-'Unuq* mentioned as a type of *Waja' al-Mafāṣil*, closely resembles cervical spondylosis (Khan, 2010). *Waja' al-Mafāṣil* includes *Niqris* (Gout), *Waja' al-Warik* (Hip Joint Pain), *Waja' al-Rukba* (Knee Joint Pain), and *Waja' al-'Unuq* (cervical spondylosis), etc. and has been broadly classified under different categories depending upon severity and etiology. (Khan, 2010). According to *Ibn Zuhr,* Cervical spondylosis is associated with neck pain, photophobia, phonophobia and headache**[20]**.

There is no direct reference of cervical spondylosis in Unani medicine, the term *Waja' al-'Unuq* mentioned as a type of *Waja' al-Mafāṣil* most aptly refers to cervical spondylosis.It is discussed under the heading of *Awaja' al-Mafāṣil* which includes all types of pain like *Waja' al-Warik* (Hip pain), sciatica, and *Waja' al-'Unuq* (Neck pain), etc. According to Unani concept, *Waja' al-'Unuq* is a result of excessive cold exposure and prolonged abnormal posture of the neck during sleep and work. It causes contraction of the *Qasiyah Ḥilmiya* (neck muscles). The symptoms are *Waja' (*pain), *Ṣalābat* (stiffness) restricted neck & shoulder movement, and *Ṣudā'* (headache) The neck pain is aggravated by any jerking movement of the head **[21]**. Local tenderness and swelling may also present **[20,22–25]**.

In Unani Medicine *Sū'-i-Mizāj Sada/ Sū'-i-Mizāj Maddi* are considered the main

pathological factors of *Waja' al-'Unuq*. The legendary scholar *Ibn Sīnā* in his book *Al-Qānūn fi'l Ṭibb* mentioned that the pain is due to the accumulation of excess humor (*Khilṭ*) or due to the *Mawād-i-Fāsida* (morbid matter) in the joint spaces which leads to *Sū'-i-Mizāj*. The joint which receives the morbid humor is the primary site of the pain **[23]**. In the case of *Sū'-i-Mizāj Sada*, there is derangement of the temperament of the affected part that is why it becomes painful without any swelling or inflammation **[22,24]**. In the case of *Sū'-i-Mizāj Maddi, Waram* (inflammation) is due to the accumulation of excess humours especially due to *Lazij Balgham* (highly viscous phlegm), and sometimes due to the excess and admixture of *Dam Ṣafrā* and rarely *Sawdā* is involved **[20,22–25]**. Legend Scholar and Physician *Samarqandī* pointed out that the ailment is the result of the weakening of the joints and pouring of a morbid material within the joints. When an organ becomes weak it easily accepts or receives morbid matter **[21]**.

5.1 Management in Unani system of medicine

In the Unani system of medicine, various types of *Waja' al-Mafāṣil* are managed with several pharmacological agents and *Tadabīr* (regimes). These therapeutic schedules include various oral and topical pharmacological agents like *Ḥabb-i-Suranjān, Majūn Suranjān, Ḥabb-i-Asgand*, etc. **(Table-1 & 2)** and regimens like *Faṣd* (Venesection), *Ḥijāma bi'l Sharṭ* (Wet cupping), *Ḥijāma bilā Sharṭ* (Dry cupping), *Ta'līq al-'Alaq* (Leech therapy), *Dalak* (Massage), *Naṭūl* (Douching/ Pouring) etc.**(Table-3) [18]**. The legendary Unani physician Ibn Sīnā (980-1037 AD) in his book *Al-Qānūn fi'l Ṭibb* mentioned that the displacement of vertebrae results in restrictions in movement. In such cases, if adjacent nerves are also affected, then it may result in pain which can be severe. In such cases, regimes such as *Faṣd*, *Ḥijāma* etc. are beneficial **[23]**.

Table 1: Single drug treatment for cervical spondylosis and radiculopathy in Unani medicine

S. No.	Single Herbal Drug	Botanical name	Action	References
1	*Azāraqi (Nux Vomica)*	*Strychnos nuxvomica*	*Muqawwī-i-A'ṣāb* (Nervine tonic)	[26–28]
2	*Balādur(Marking nut)*	*Semecarpus anacardium*	*Muqawwī-i-A'ṣāb* (Nervine tonic)	[26–28]
3	*Jadwār(Larkspur)*	*Delphinium denudatum*	*Muqawwī-i-A'ṣāb* (Nervine tonic)	[26–28]
4	*Jund bedstar(Castorium)*	*Castor canadensis*	*Muqawwī-i-A'ṣāb* (Nervine tonic)	[26–28]
5	*Suranjān Shirīn (Golden collyrium)*	*Colchicum luteum*	*Muḥallil* (Anti-inflammatory), *Munzij* (Concoctive)	[26–28]
6	*Chob Chīni (China Root)*	*Smilax china*	*Muḥallil* (Anti-inflammatory), *Munzij* (Concoctive)	[26–28]

7	*Muqil (Bedellium)*	*Commiphora mukul*	*Murkhī* (Relaxant), *Muḥallil* (Anti-inflammatory)	[26–28]
8	*Farfiyūn (Euphorbium)*	*Euphorbia resinifera*	*Murkhī* (Relaxant), *Muḥallil* (Anti-inflammatory)	[26–28]
9	*Aftīmūn (Dodder/ Cascuta)*	*Cuscuta reflexa*	*Munzij* (Concoctive), *Mu'addil* (Alterative)	[26–28]
10	*Shāhtara (Fumitory)*	*Fumaria parviflora*	*Munzij* (Concoctive), *Mu'addil* (Alterative)	[26–28]
11	*Mako khushk (Black Night Shade, Dried)*	*Solanum nigrum*	*Munzij* (Concoctive), *Mu'addil* (Alterative)	[26–28]
12	*Bisfāij (Common polypody)*	*Polypodium vulgare*	*Munzij* (Concoctive), *Mu'addil* (Alterative)	[26–28]
13	*Elva (Aloe)*	*Aloe barbadensis*	*Muḥallil* (Anti-inflammatory)	[26–29]
14	*Sana Makki (Macca Senna)*	*Cassia angustifolia*	*Muḥallil* (Anti-inflammatory)	[26–28]
15	*Saqmonia (Scammony)*	*Convolvulus scammonia*	*Mulayyin* (Laxative), *Muḥallil* (Anti-inflammatory)	[26–28]
16	*Ṣandal Safaid (Sandal wood)*	*Santalum album*	*Musakkin-i-Alam* (Analgesic)	[26–28]
17	*Kāfūr (Camphor)*	*Cinnamomum camphora*	*Musakkin-i-Alam* (Analgesic)	[26–28]
18	*Isapghol (Spogel seeds)*	*Plantago ovata*	*Musakkin-i-Alam* (Analgesic)	[26–28]
19	*Afyūn (Opium)*	*Papaver somniferum*	*Musakkin-i-Alam* (Analgesic)	[26–28]
20	*Anjīr (Fig)*	*Ficus carica*	*Murkhī* (Relaxant), *Muḥallil* (Anti-inflammatory)	[26–28]
21	*Zaitūn (Olive)*	*Olea europea*	*Murkhī* (Relaxant), *Muḥallil* (Anti-inflammatory)	[26–28]

Table 2: Compound drugs for cervical spondylosis and radiculopathy in Unani medicine

S. No	Compound Formulation	Ingredients	Dosage Form	Main action	Reference
1.	*Majūn Suranjān*	*Tukhm-i-Karafs (Apium graveolens Linn.), Badiyān (Foeniculum vulgare), Mirch Safaid (Piper nigrum), S'tar (Origanum vulgare), Namak Hindi (Sodium chloride), Barg-i-Ḥina (Lawsonia inermis), Bozidān (Pyrethrumindicum), Shīṭraj Hindi (Plumbago zeylanicum), Bekh-i- Kibr (Capparis spinosa root), Gul-i-Surkh (Rosa damascena flower), Kishnīz (Coriandrum sativum), Zanjabīl (Zingiber officinalis), Saqmoniya (Convolvulus scammonia), Suranjān Shīrin (Colchicum luteum)*	Electuary	Anti-inflammatory (*Muḥallil*)	**[30]**
2.	*Ḥabb-i-Suranjān*	*Ṣibr Saqoṭri (Aloe barbadensis), Tukhm-i-Soya (Anethum sowa), Turbud Safaid (Operaculina turpethum), Ḥabb-ul-Nīl (Ipomoea nil), Muqil (Commiphora mukul), Suranjān (Colchicum luteum), Mastagi (Pistacia lentiscus)*	Pill	Anti-inflammatory (*Muḥallil)*	**[30]**
3.	*Ḥabb-i-Asgand*	*Ajwāin Desi (Trachyspermum ammi), Asgand (Withania somnifera), Bidhāra (Argyreia nervosa), Pīpla Mūl (Piper longum), Pīpal Kalān (Piper longum), Zanjabīl (Zingiber officinale), Satāwar (Asparagus racemosus), Mūsli Siyāh (Curculigo orchioides), Gur (Jaggery)*	Pill	Anti-inflammatory (*Muḥallil*), Analgesic *(Musakkin-i-Alam)*	**[30]**
4.	*Ḥabb-i-Azarāqi*	*Kuchla (Strychnos nuxvomica), Filfil Siyāh (Piper nigrum), Dar-i-Filfil*	Pill	Nervine tonic *(Muqawwī-*	**[31]**

		(Piper longum)		*i-A'ṣāb)*	

Table 3: Regimenal therapies for cervical spondylosis and radiculopathy in Unani medicine

S. No.	Name of Regimenal therapy	Definition	Site	Reference
1.	*Faṣd* (Venesection)	A form of blood-letting method that is done by applying incision to the veins)	*Qīfāl* (cephalic vein), *Akhal* (medial cubital vein)	**[18,23,32]**
2.	*Ḥijāma bi'l Sharṭ* (Wet Cupping)	Cupping with incision	*Kāhil* (point on the inter-scapular region below 7th cervical vertebra), *Akhda'ayn* (on the back of both ears), *Nuqra* (at the back of cranium 4 inch above the neck)	**[18,20,23,32]**
3.	*Ḥijāma bilā Sharṭ* (Dry Cupping)	Cupping without incision	*Kāhil*, *Akhda'ayn* and *Nuqra*	**[18,20,23,32]**
4.	*Ta'līq al-'Alaq* (Leech Therapy)	Application of medically breeded leech on the affected part, it can be done Alone or with some Unani pharmacological agent.	At the site of pain	**[18,20,23,32,33]**
6.	*Dalak* (Massage)	Method where pressure kneading, friction, rubbing, tapping, against the affected parts of the body with hands or objects like rough cloth with or without *Roghan* (oil).	At the site of pain	**[18,20,23,32,33]**
7.	*Naṭūl* (Douching/ Pouring)	Pouring of Unani medications over various parts of the body	At the site of pain	**[18,20,23,32,33]**
8.	*Bakhūr/ Inkibāb*	Medicated Steam	At the site of pain	**[34]**
9.	*Imāla*	Diversion of the morbid matter from the site of disease through *Ḥijāma* or *Faṣd*	*Kāhil*, *Akhda'ayn and Nuqra*	**[18,23,32]**

ḤIJĀMA

The word *Ḥijāma* is an Arabic word which is derived from "*al- ḥajm*" meaning "to suck". *Ḥijāma* can be defined as a Unani Regimenal mode of treatment which is carried out by application of cup, creating vacuum by special suction apparatus or by fire (*Ḥijāma bi'l Nār*) **[18]**. The World Health Organization (WHO) defines cupping as 'a therapeutic method (Code 5.3.2) involving the application of suction by creating a vacuum. This is typically done using fire in a cup or jar on the dermis of the affected part of the body' (Code 5.3.7) **[35]**. Cups used to create the vacuum are made up of glass, plastic, rubber, or wood. These cups are available in various sizes and are used according to the site to be applied. Overall, cupping promotes *Imāla,* i.e. diversion of morbid material from the diseased part; it also causes *Istifrāgh* (expulsion) of morbid humor; and also improves blood circulation. Depending upon

whether incision is given or not *Ḥijāma* is classified into two types: *Ḥijāma bi'l Sharṭ* (Wet Cupping/ Cupping with incision/ scarification) and *Ḥijāma bilā Sharṭ (*Dry Cupping/ Cupping without incision/ scarification). *Ḥijāma* (Cupping) has been practiced since ancient times. The ancient Egyptians were the first to use *Ḥijāma* (cupping). The oldest medical textbook, written in approximately 1550 BC, in Egypt, describes bleeding by *Ḥijāma* (cupping) to 'remove the foreign matter from the body'. Later, Galen was a practitioner of the procedure. After a long period of neglect, *Ḥijāma* (cupping) was revived in the Islamic age.

Significance of Ḥijāma in cervical spondylosis or radiculopathy

Abū al-Qāsim Zahrāwī in his book *Kitāb al-Taṣrīf* mentioned that the application of *Ḥijāma bi'l Sharṭ* on *Akhda'ayn* is beneficial in Cervical Spondylosis. According to *Abū al-QāsimZahrāwī Akhda'* is the bony prominence on each side behind the ears **[36]**. In many clinical studies, it has been established that a site for *Ḥijāma bi'l Sharṭ* on the head, posterior to the auricle, in the depression posterior and inferior to the mastoid process (near the insertion of sternocleidomastoid muscle) is the most suitable site for the treatment of cervical spondylosis.(WHO library cataloguing in publication Data, 1993).This site corresponds to the location of *Akhda'ayn* described by *Abū al-Qāsim Zahrāwī*. *Kāhil* is a point on the inter-scapular region below the 7th cervical vertebra. *Ḥijāma* on *Kāhil* is described to be an effective mode of *istifrāgh* for removing *Mawād-i-Fāsida* (morbid matter) from the neck, shoulder, and arm**[18]**. As per the classical Unani literature treatment with *Ḥijāma bi'l Sharṭ* on the sites of both *Akhda'ayn* and *Nuqra* and *Kāhil* are indicated in cervical spondylosis**[37]**. *Ibn Sīnā* and other Unani scholars have mentioned that *Ḥijāma bi'l Sharṭ* on *Nuqra* may cause dementia **[23,38]**.

In a study conducted by Kim *et al*., it was found that cupping reduced neck pain and was also associated with significant improvement in terms of function and quality of life in patients compared with no intervention or active control groups, or as an add-on treatment **[39]**. The Cupping therapy can cause vasodilatation and improve blood circulation to increase metabolism and accelerate the elimination of waste and toxins of the body **[40]**. It was suggested that cupping may be more effective than medications for the treatment of chronic neck or lower back pain **[41]**. Many researchers have established the effects of *Ḥijāma bi'l Sharṭ* in cervical

spondylosis. A recent study demonstrated that wet cupping therapy is beneficial in cervical spondylosis by activating blood circulation and removing stasis, opening an activating meridian, eliminating swelling, and stopping pain, thus adjusting the body's organs and curing this disease **[42]**.

DISCUSSION AND CONCLUSION

Cervical spondylosis or radiculopathy is a common problem in adults as well as in young people due to the mode of their work and lifestyle. Currently, many non-pharmacological and pharmacological therapies are being used for the management of cervical spondylosis and radiculopathy in conventional medicine. Non Pharmacological therapies like rest, cervical traction to reduce the tension of the nerve roots and to reduce muscle spasm, physiotherapy (such as isometric exercises, short wave diathermy, and infrared rays), neck exercises (such as mobilization exercises, strength exercises), and cervical Collar. Non Pharmacological therapies have certain drawbacks like cervical traction and neck exercises give only temporary relief and long use of cervical collar weakens the muscles. Pharmacological agents like analgesics, NSAIDs, muscle relaxants, and corticosteroids are used to reduce inflammation around the nerve route. Pharmacological agents carry a major burden of unwanted side effects as they are to be administered repeatedly. In severe cases, surgery is required which consists of anterior Cervical, Discectomy, Laminectomy, and Foraminotomy. Surgical treatments have their shortcomings like failures and non-compliance of patients **[43]**. In a study conducted on more than 28,813 patients, it was found that most patients continued using high-doses of opioids after anterior cervical discectomy, for periods of up to one year after surgery. (Andrew, *et al*., 2020). On the other hand, Unani system of medicines provides multiple modes of treatment with fewer side effects as well as it treats the *madda* (cause) of the disease therapies of *'Ilāj bi'l Tadbīr* like *Fasd* (Venesection), *Ḥijāma bi'l Sharṭ* (Wet cupping), *Ḥijāma bilā Sharṭ* (Dry cupping), *Ta'līq al-'Alaq* (Leech therapy), *Dalak* (Massage), *Natūl* (Douching/ Pouring) etc. mimics an analgesic effect which has no known negative effects and may be considered safe. *Ḥijāma* (Cupping) has been considered as miracle for the chronic joints pain.However, further studies are required to improve the understanding and potential long-term effects of modes of the treatment.

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Conflict of Interest

None

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