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SUCCESSFUL MANAGEMENT OF WAJA'AL-RUKBA (KNEE OSTEOARTHRITIS) WITH UNANI PHARMACOPEIAL POULTICE: A CASE STUDY

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Abstract

Knee osteoarthritis (Knee OA) is the most common Musculoskeletal disorder, which causes functional disability thus, increasing the economic burden in society. In Unani medicine knee Osteoarthritis is treated with various regimens and drugs. Among these regimens, *Dimād* (Poultice) is prepared with several single Unani pharmacopeial drugs that exert anti-inflammatory, analgesic and anti-arthritic actions. Keeping this in mind a case study was conducted to assess the efficacy of *Dimād-i-jalinus* a pharmacopeial Unani formulation in the management of Knee OA. A 63-year-old female patient with chief complaints of pain and swelling in the left knee joint, joint stiffness and mild tenderness feeling severe pain while performing daily activity for the last 6 months was treated at OPD of Hakim Syed Ziaul Hasan Govt. (Auto) Unani Medical College & Hospital, Bhopal. *Dimād-i-jalinus* was given to the patient, in paste form and the patient was explained to use this paste over the anterior surface of the Left knee joint and the bandage was wrapped to keep the medicines in place overnight every day for 14 days. The patient was assessed at baseline, 7th day and 14th day based on changes in subjective and objective parameters with the help of Visual Analogue Scale (VAS) and Western Ontario and McMaster Universities Arthritis Index (WOMAC). The present study reveals that *Dimād-i-jalinus* is safe and effective in treating Knee OA without any side effects. Therefore, further randomized clinical studies need to be carried out to validate the effectiveness of *Dimād-i-jalinus* in the management of Knee OA.

Keywords: Waja'al-Rukba, Knee Osteoarthritis, *Dimād-i-jalinus*, *Waja'al-Mafāsīl*, Unani System of Medicine.

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Introduction

Osteoarthritis (OA) is the most common joint disease and a major cause of pain and disability in adults [1]. It affects around 250 million people worldwide [2]. OA is the second most common rheumatologic problem in India, with 22% to 39% of the population affected [3]. Knee OA

can be classified as primary (having no known cause) or secondary (resulting from another condition) [2]. Major risk factors include aging, being female, past injuries, obesity, sports injuries, inflammation, genetics, and nutritional deficiencies [4]. Common symptoms include chronic pain, joint instability, stiffness, and narrowing of the joint space seen in X-rays [5]. Diagnosis of osteoarthritis is confirmed using imaging techniques like X-rays, Magnetic Resonance Imaging (MRI), and ultrasound. Blood tests can also help evaluate the onset and progression of the disease [6]. Currently, some new treatments show promising effects, such as serotonin-norepinephrine reuptake inhibitors, IL-1 antagonists, and antibodies to nerve growth factors [7]. The goal of treating

osteoarthritis is to manage the pain from the affected joints and to improve physical function and quality of life. Non-drug therapies should always be the first treatment tried for knee osteoarthritis [2].

In the Unani system of medicine, knee osteoarthritis is not specifically mentioned. Instead, there is a general term, “Waja’al-Mafāsīl,” that covers all types of arthritis [8]. Ancient Unani physicians classified arthritis based on temperament, the presence or absence of harmful material, the type of harmful material, and the site of symptoms, giving specific names to different conditions such as *Niqris* (gout), *Waja’al-Warik* (hip joint pain), *Irq’al-Nasa* (sciatica), and *Waja’al-Unuq* (neck pain) [9]. Similarly, “Waja’al-Rukba” is used for knee pain, with “Waja” meaning pain and “Rukba” meaning knee. Therefore, knee osteoarthritis is treated according to the guidelines for *Waja’al-Mafāsīl* in Unani literature. There are three treatment methods in Unani medicine: *‘Ilāj bi’l Tadbīr* (Regimenal Therapy) wa *‘Ilāj bi’l Taghdiya* (dietotherapy), *‘Ilāj bi’l Dawā’* (pharmacotherapy), and *‘Ilāj bi’l Yad* (surgery). *‘Ilāj bi’l Tadbīr* includes various non-pharmacological or minimally drug-based treatments. One such treatment is *Dimād*, the application of medicated paste on the skin, which ancient physicians used to manage different painful musculoskeletal disorders [10]. In this case, *Dimād-i-jalinus* a pharmacopeial Unani formulation was applied over the anterior part of the left knee every day for 14 days.

Case History

Patient Information

A 63-year-old female patient came to the OPD of Hakim Syed Ziaul Hasan Govt. (Auto) Unani Medical College & Hospital, Bhopal on July 3, 2024. The patient had a history of pain and swelling in the left knee joint with difficulty in standing and walking six months before the visit. The patient experienced localized and dull pain. The pain was associated with morning stiffness but did not radiate. The pain increases with physical activities such as walking or running. The patient denied any history of trauma to either knee. The patient had no chronic medical illness.

Clinical Finding

Her vitals were within normal limits on general examination, and no abnormality was detected through systemic examination. Clinical examination showed no external knee deformity in either knee. On palpation of left knee joint crepitus, tenderness, and mild swelling were present. There was a restriction of flexion and extension during the examination of the Range of motion of the left knee joint. The patient was unable to perform her daily physical activity.

Diagnostic Assessment

Before starting the procedure patient underwent thorough some precautionary lab investigations which was in the normal range. An X-ray of the left knee joint

Anteroposterior and Lateral view reveals osteophytes on the tibial spine while tibia-femoral joint space was normal; these findings were suggestive of Kellgren-Lawrence Grade 2 knee osteoarthritis. Based on the above findings it was diagnosed as osteoarthritis of left knee joint.

Tabel No.1 Lab Investigation on 04/07/2024

S.N O.	Blood Parameter	Observed Value	Method
1	COMPLETE BLOOD COUNT (CBC)		
	Haemoglobin (Hb)	11.2 g/dL	Cynmeth Method
	RBC Count	4.16	Cell Impedence
	Haematocrit (HCT)	33.0	Calculated
	MCV	79 fl	Calculated
	MCH	27.0 pg	Calculated
	MCHC	34.0 g/dL	Calculated
	RDW-CV	13.3 %	Calculated
	Platelet Count (PLT)	300 10 ⁹ /L	Cell Impedence
	Impedance Total WBC Count	7.9 10 ⁹ /L	Impedance
	Neutrophils	65 %	Cell Impedence
	Absolute Neutrophils Count	5.14 10 ⁹ /L	Impedance
	Lymphocytes	30 %	Cell Impedence
	Absolute Lymphocyte Count	2.37 10 ⁹ /L	Impedance
	Monocytes	03 %	Microscopy
	Absolute Monocyte Count	0.24 10 ⁹ /L	Calculated
	Eosinophils	02 %	Microscopy
	Absolute Eosinophils Count	0.16 10 ⁹ /L	Calculated
	Basophils	00 %	Microscopy
	Absolute Basophil count	0.00 10 ⁹ /L	Calculated
2	Erythrocyte Sedimentation Rate (ESR)	15 mm/hr	Westergren method
3	C-Reactive protein-(CRP)	2.316 mg/L	Immunoturbidimetry
4	Glucose Fasting (F)	83.3 mg/dL	Hexokinase
5	Calcium	9.2 mg/dL	Arsenazo
6	Lipid Profile		
	Cholesterol	183	CHOD-POD

	Total	mg/dL	
	Triglycerides-TGL	162 mg/dL	GPO-POD
	Cholesterol-HDL	45 mg/dL	Direct
	Cholesterol-LDL	105.6 mg/dL	Calculated
	Cholesterol-VLDL	32.4 mg/dL	Calculated
	Non-HDL Cholesterol	138 mg/dL	Calculated
	Cholesterol Total /HDL Ratio	4.07 %	Calculated
	HDL / LDL Ratio	0.43 %	
	LDL/HDL Ratio	2.35 %	Calculated
7	Kidney Profile-KFT		
	Creatinine - Serum	0.7 mg/dL	Sarcosine oxidase
	Urea-Serum	19.0 mg/dL	Glutamate dehydrogenase + Calculation
	Blood Urea Nitrogen (BUN)	8.88 mg/dL	Calculated
	BUN / Creatinine Ratio	12.69	
	Uric Acid	4.7 mg/dL	Uricase
	Sodium	139 mmol/L	ISE Direct
	Potassium	4.0 mmol/L	ISE Direct
	Chloride	101 mmol/L	ISE Direct
8	Liver Function Test (LFT)		
	Bilirubin (Total)	0.3 mg/dL	Diazo
	Bilirubin (Direct)	0.1 mg/dL	Diazo
	Bilirubin (Indirect)	0.2 mg/dL	Calculated
	Aspartate Aminotransferase (AST/SGOT)	19 U/L	IFCC without (P-5-P)
	Alanine Aminotransferase (ALT/SGPT)	16 U/L	IFCC without (P-5-P)
	Alkaline Phosphatase (ALP)	74 U/L	Kinetic PNPP-AMP
	Gamma Glutamyl Transpeptidase (GGTP)	14 U/L	IFCC
	Protein - Total	7.7 g/dL	Biuret

	Albumin	4.0 g/dL	Bromocresol Green (BCG)
	Globulin	3.7 g/dL	Calculated
	A: G Ratio	1.08 %	Calculated
	SGOT/SGPT Ratio	1.19	
9	Thyroid Profile-I (TFT)		
	T3 (Triiodothyronine)	74.25 ng/dL	CLIA
	T4 (Thyroxine)	9.9 µg/dL	CLIA
	TSH -Thyroid Stimulating Hormone	4.83 µIU/mL	CLIA
10	Rheumatoid Factor, RA	11.97 IU/mL	Immunoturbidometry

Therapeutic intervention

Dimād-i-jalinus was prepared in the *Saidla* lab of Hakim Syed Ziaul Hasan Govt. (Auto) Unani Medical College & Hospital, Bhopal as per the guidelines of the national formulary of Unani medicine. The *Dimād* procedure was explained to the patient in detail before the treatment and written consent was obtained by the researcher. *Dimād-i-jalinus* was given to the patient, in paste form and the patient was explained to use this paste over the anterior surface of the Left knee joint and the bandage was wrapped to keep the medicines in place overnight every day for two weeks. In the morning the bandage was removed and the area was washed properly with lukewarm water.

Table No. 2 Ingredients of *Dimād-i-jalinus* [10]

Unani name	Botanical name/ Scientific name	Temperament	Action in local application
<i>Zanjabeel</i>	Zingiber officinale Rose.	Hot ³ and Dry ²	<i>Muhallil</i> (anti-inflammatory), <i>Musakkin</i> (analgesic) [11]
<i>Jausheer</i>	Perula galbanifula Houtt.	Hot ³ and Dry ³	<i>Muhallil</i> (anti-inflammatory), Resolvent, Muscular Tonic, Deobstruent [11]
<i>Sibr</i>	Aloe barbadensis Linn.	Hot ² and Dry ²	<i>Qābiḍ</i> (astringent), <i>Mujaffif</i> (drying agent) [11]
<i>Bahroza</i>	Pinus longifolia Roxb.	Hot ³ and Dry ³	<i>Muhallil</i> (anti-inflammatory), <i>Musakkin</i>
<i>Mastagi</i>	Pistacia leniscus	Hot ² and Dry ²	<i>Muhallil</i> (anti-inflammatory),

	Linn.		Qābiḍ(astringent) [11]
Roghan-i-Sosan	-	-	-
Mom Zard	Cera	Mu'tadil	Muḥallil (anti-inflammatory), Munziz (concoctive), Musakkin (Analgesic) [11]

Follow-up and outcomes

The treatment was given every day up to 14 days, follow-up was done up to 21 days; and findings and outcomes were monitored on days 0, 7, 14, and 21. The patient was assessed on the 0th day, 7th day, 14th day, and after completion of treatment i.e., on the 21st day with the help of Objective parameters i.e., Visual Analogue Scale (VAS) for measurement of pain and Western Ontario and McMaster Universities Arthritis Index (WOMAC) that is based on the pain intensity, intensity of joint stiffness and difficulty in ADL (daily life activities). The total VAS was 9 (pain is very severe at this score) at baseline which improved to 4 on the 7th day and 1 on the 14th day. The scoring for WOMAC at baseline was 72 and after treatment was 28 pointing to reduction in the severity of symptoms. No adverse events were noticed during the treatment.

Flow chart 1: Timeline of events. VAS: Visual Analogue Scale; WOMAC: Western Ontario and McMaster Universities Arthritis Index

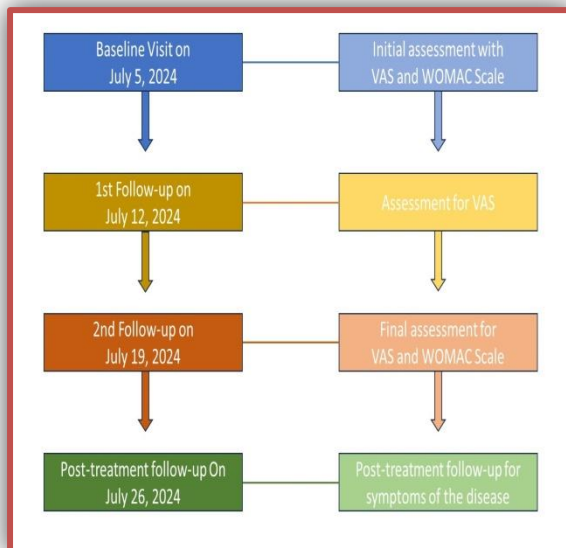


Table No. 3 Outcomes of the Case Study

S.NO.	Parameters	BASELINE	7 th DAY	14 th Day
1	Visual Analogue Scale (VAS)	9	4	1
2	Western Ontario and McMaster Universities	72	-	28

	Arthritis Index (WOMAC)			
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Discussion

Treatment approach

The primary treatment objectives for knee osteoarthritis are to halt the degenerative process and alleviate symptoms, enabling patients to maintain mobility and perform daily activities independently. The Unani system of medicine offers a holistic approach to achieving these goals, emphasizing treatments that are effective, economical, and have fewer side effects compared to conventional methods. The Unani system employs various therapeutic strategies, including 'Ilāj bi'l Tadbīr (Regimenal Therapy) wa 'Ilāj bi'l Taghdiya (dietotherapy), 'Ilāj bi'l Dawā' (pharmacotherapy), and 'Ilāj bi'l Yad (surgery). This case study explored the application of *Dimād-i-jalinus* for treating knee osteoarthritis.

The case was approached with the line of treatment of *Waja'al-Mafāsīl* (joint pain), such as *Tahleel Mawad* (dissolution of morbid matter), *Ta'dīl-i-Mizāj* and *Imāla Mawad* (diversion of morbid matter) [12] to alleviate symptoms and improve joint function. This multifaceted approach targets symptom relief and aims to hold up disease progression, thereby enhancing the patient's quality of life and functional capacity.

The probable mode of action of Dimād-i-Jalinus

Dimād (Poultice) is a local application of semisolid medicated preparation over the body surface [13, 14]. *Dimād-i-jalinus*, a specific formulation within the Unani system of medicine, contains a combination of ingredients known for their significant analgesic, anti-inflammatory, decongestant, and anti-arthritis properties [11]. This combination makes *Dimād-i-jalinus* particularly effective in treating conditions like knee osteoarthritis. So, *Dimād-i-jalinus* may work locally by doing *Imala Mawad*, which refers to the diversion of morbid matter from the diseased area to a healthier part of the body. By redirecting these morbid substances, the formulation helps in alleviating the localized inflammatory response associated with knee osteoarthritis. The ingredients in *Dimād-i-jalinus* work synergistically to reduce inflammation and relieve pain. Moreover, the astringent properties of the drugs used in *Dimād-i-jalinus* play a crucial role in strengthening the knee joints. The astringent effect helps to tighten and tone the tissues, providing additional support and stability to the joints. This can be particularly beneficial in conditions like osteoarthritis, where joint stability is often compromised.

Patient perspective

Before treatment, I was suffering from severe left knee pain which is associated with morning stiffness. I was unable to perform my daily physical activity. After treatment, I am free from knee pain and morning stiffness. I can now walk comfortably even in the mornings.

Conclusion

The present case report reveals that applying *Dimād-i-jalinus* is quite effective in the management of *Waja'al-Rukba* (Knee OA). *Dimād-i-jalinus* was found to be safe and well tolerated by the patient. Therefore, further evaluation is necessary to reach a scientific conclusion. A more well-designed study with a standardized protocol and an adequate number of participants is needed to evaluate the effects of *Dimād-i-jalinus* in the treatment of OA of the knee.

Declaration of patient consent

The authors confirm that they have received all necessary patient consent forms. In these forms, the patient agreed to let their images and clinical information be shared in the journal. The patient understands that their names and initials will not be published, and efforts will be made to keep their identity private, but complete anonymity cannot be guaranteed.

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None

Conflict of interest

Not Declare

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