

The Contribution of Yâdigâr-i Ibn-i Sharif to Orthopedics Through Fifteenth-Century Medical Knowledge: Modern Interpretations of Traditional Therapeutic Practices and an Ethnopharmacological-Orthopedic Analysis

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Abstract:

This study examines the fifth chapter of Yâdigâr, written by the 15th-century Ottoman physician Tabîb Ibn-i Sharif, within the context of contemporary orthopedics and traumatology. The chapter addresses therapeutic approaches for musculoskeletal conditions, including fractures, dislocations, and contusions. The historical practices described in the text were interpreted in light of current biomedical and ethnopharmacological knowledge, with particular emphasis on herbal formulations and nutritional recommendations. Several of these traditional approaches suggest conceptual parallels with modern scientific understanding, especially regarding anti-inflammatory, antimicrobial, and nutritional effects that may support tissue healing. However, certain practices, such as bloodletting, are inconsistent with current orthopedic principles. Overall, this analysis indicates that historical medical texts such as Yâdigâr may provide conceptual rather than directly clinical relevance, offering valuable insights for ethnopharmacological research and contributing to a broader understanding of the historical development of orthopedic knowledge.

Keywords: Ottoman Medicine, Ethnopharmacology, Orthopedics, Fifteenth Century

Tabîb Ibn-i Sharif was a prominent Turkish physician and pharmacist who lived in Bursa (in present-day Türkiye) during the late 14th and early 15th centuries. He composed Yâdigâr in Turkish, a work addressing both preventive and therapeutic medical practices (Figure 1). As a unique source reflecting the medical worldview of its time, the text holds significant historical value and was

dedicated to Umur Bey, son of Kara Timurtaş Paşa—a key statesman during the formative period of the early Ottoman Empire—who later served as vizier [1]. Fractures, dislocations, and soft tissue injuries have remained core subjects of surgical practice throughout history. Since antiquity, reduction and immobilization techniques described by pioneers such as Hippocrates and Galen [2] were systematically advanced within the

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Islamic medical tradition and subsequently transmitted to Anatolia. During the early Ottoman period, particularly in major medical centers such as Bursa, this accumulated knowledge was preserved and disseminated through both written works and practical medical instruction. *Yâdigâr*, the work of Tabîb Ibn-i Sharif, represents a tangible example of this intellectual transmission, adapting the views of classical medical authorities to the surgical challenges of the era within a Turkish-language text. The fifth chapter of the work focuses on traumatic conditions such as fractures, dislocations, and contusions, thereby constituting an important source documenting the historical foundations of Orthopedics and Traumatology. However, it should be noted that *Yâdigâr* emphasizes pharmacological treatments rather than orthopedic techniques such as reduction and immobilization.

In this context, the therapeutic recommendations in *Yâdigâr* primarily consist of distinctive herbal formulations and empirically derived practices rather than surgical interventions typical of the period. In other sections of the text, some descriptions of non-orthopedic diseases exhibit partial consistency with modern medical knowledge [3].

The dedication of the work to Umur Bey demonstrates that medical knowledge was valued not only among physicians but also within the governing elite. This highlights the close interplay between scientific production and the sociopolitical environment in early Ottoman medicine [1].

The inclusion of an entire chapter devoted to surgical ailments—especially fractures, dislocations, and crush injuries—in *Yâdigâr* suggests the existence of a distinctive body of knowledge related to Orthopedics and Traumatology in early Turkish

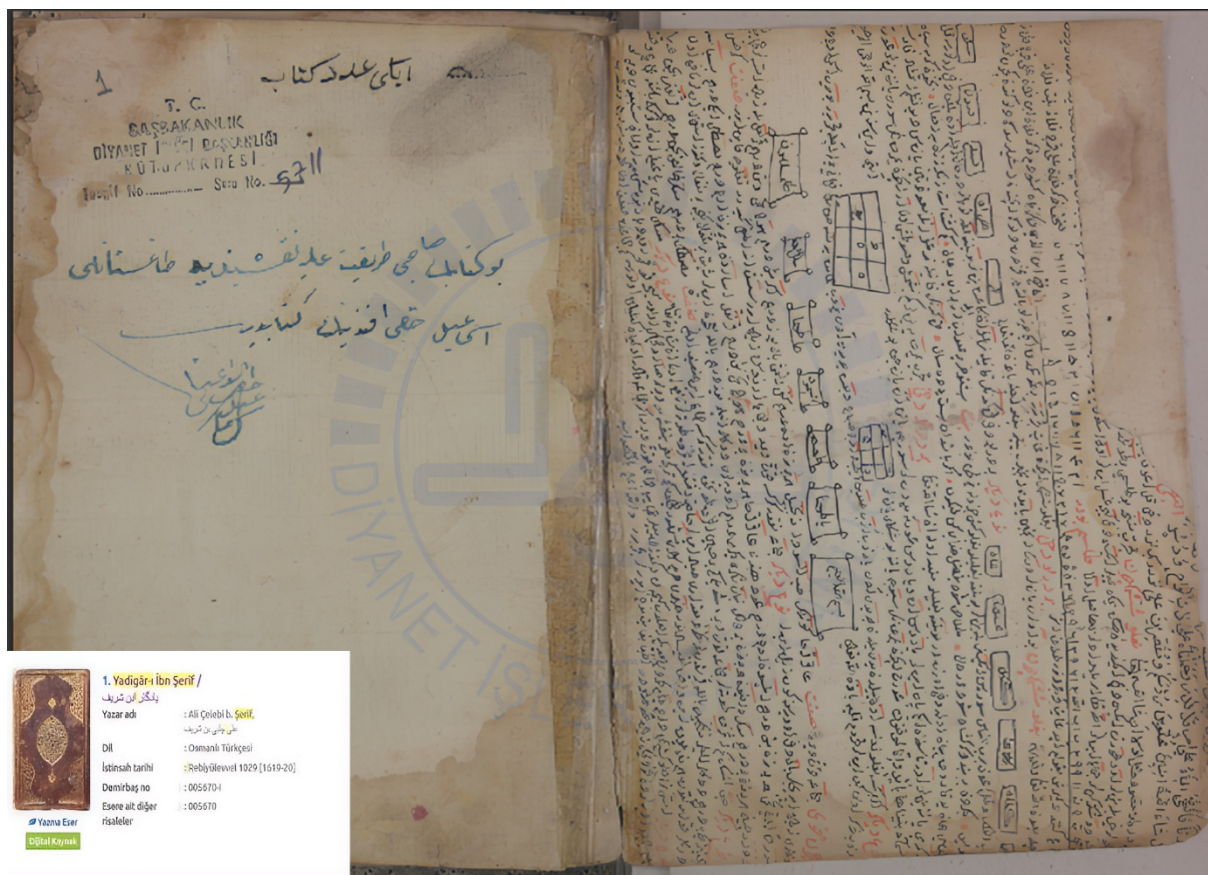


FIGURE 1. Digital copy of the *Yâdigâr* manuscript obtained from the Diyanet Digital Library (<https://yazmaeserler.diyamet.gov.tr/details?id=6899&materialType=YE&query=Ali+%C3%87eleb%C3%AE>). Composed in Old Anatolian Turkish in the late fourteenth to early fifteenth century, *Yâdigâr* is among the earliest vernacular medical compendia of the early Ottoman period and represents a key textual witness to the transmission of classical and Islamic medical knowledge into the Anatolian tradition.

medical practice. The independent structure of this chapter is noteworthy, as it indicates that trauma-related musculoskeletal disorders were regarded as a specialized area within the medical practice of the period. In this respect, *Yâdigâr* serves as an important primary source for studies investigating the pharmacological and historical origins of Orthopedics and Traumatology.

In the present narrative review, the fifth chapter of *Yâdigâr*, authored by Ibn-i Sharif in the 15th century, is examined from the perspective of contemporary Orthopedics and Traumatology. The therapeutic approaches described for fractures, dislocations, and contusions are comparatively evaluated in the context of current medical knowledge and clinical practices. Furthermore, the potential therapeutic effects of the pharmacological substances recommended in the text for such traumatic conditions are analyzed in the light of modern scientific data, thereby assessing the possible clinical relevance of historical medical knowledge.

Scope of the Review

This narrative review examines the fifth chapter of *Yâdigâr*, a Turkish medical text authored by Tabîb Ibn-i Sharif in the 15th century [1]. The relevant chapter contains traditional therapeutic approaches related to musculoskeletal disorders. The text was obtained from the 2017 edition published by the Merkezefendi Traditional Medicine Association.

The treatment methods proposed by Ibn-i Sharif for traumatic conditions such as fractures, dislocations, and contusions were analyzed comparatively in the context of contemporary knowledge in Orthopedics and Traumatology. In particular, the herbal remedies and nutritional recommendations included in the text were evaluated through a review of current pharmacological literature.

All therapeutic claims presented in the fifth chapter of *Yâdigâr* that relate to fractures, dislocations, and contusions were identified and thematically categorized into four groups: bloodletting and cupping practices, herbal formulations, nutritional recommendations, and mechanical interventions (reduction and immobilization). Plant names mentioned in the original text were cross-checked against current botanical nomenclature, and accepted

Latin binomials were used throughout.

The pharmacological properties of the plant species cited in the herbal treatments (e.g., *Rheum officinale*, *Potentilla erecta*, *Spinacia oleracea*, *Saponaria officinalis*) were investigated using academic databases such as PubMed, ScienceDirect, and Google Scholar. Literature searches were performed using keyword combinations including the Latin plant name together with the terms "anti-inflammatory," "antibacterial," "osteogenic," "fracture healing," and "bone metabolism," without a restricted publication timeframe, in order to identify the most relevant modern pharmacological evidence. The anti-inflammatory, antibacterial, osteogenic, and analgesic effects of each plant were examined and compared with current clinical knowledge. Through this methodological approach, the review aims to determine the extent to which the traditional practices described in the historical text may have a basis in modern scientific principles, allowing for an interdisciplinary evaluation from both historical medical and ethnopharmacological perspectives.

Bloodletting, Cupping, and the Role of the Fracture Hematoma

In the fifth chapter of his work, Ibn-i Sharif states that in cases of fractures or dislocations, bloodletting should be performed initially unless contraindicated [1]. However, according to contemporary medical knowledge, blood supply and the biological environment are among the most critical local factors influencing fracture healing [4]. Immediately after a fracture, disruption of the surrounding vasculature leads to reduced perfusion. This condition recovers within several hours to a few days, peaks by the second week, and returns to baseline within three to five months [5]. A reduction in blood supply may result in delayed union or nonunion [5]. Therefore, individuals who sustain trauma should avoid bloodletting for a certain period. For this reason, Ibn-i Sharif's recommendation is inconsistent with modern orthopedic practice.

The author further notes that if bloodletting is not feasible, cupping should be performed at the same site to divert blood. He also describes the use of hukne (puncture) to soften the interior of the injured region [1].

In modern Orthopedics and Traumatology,

whether a hematoma should be evacuated depends on its size, location, cause, and the patient's overall condition. Large or deep hematomas—especially those near joints, muscle compartments, or vital structures—may require surgical drainage or needle aspiration. If there is a risk of compartment syndrome, which can lead to limb loss or severe functional impairment, urgent surgical decompression is necessary [5]. Current evidence also emphasizes that preserving the original fracture hematoma supports natural healing due to its osteogenic potential [5, 6].

Herbal Therapies Recommended for Fractures

The text also recommends râvend-i çînî (Rheum palmatum or Rheum officinale), administered mixed with syrup [1]. Modern literature shows that Rheum officinale possesses significant antimicrobial and anti-inflammatory properties [7]. Since inflammation constitutes the first phase of fracture healing, maintaining a balanced inflammatory response is essential. Additionally, rhubarb may indirectly support mineral absorption—such as calcium and phosphorus—by regulating gastrointestinal function, which is critical for bone repair [6]. At first glance, this appears paradoxical: anti-inflammatory activity may suppress early healing, yet enhanced mineral absorption supports it. Ibn-i Sharif's use of the plant may have aimed to reduce soft tissue swelling and discomfort, while unintentionally benefiting from improved mineral uptake.

Rheum palmatum and Rheum officinale have also demonstrated antibacterial effects, particularly against *Staphylococcus aureus* [8–13]. Their mechanisms include altering membrane permeability, inhibiting protein synthesis, and disrupting respiratory metabolism [10, 11]. Emodin, a rhubarb derivative, has shown both in vitro and in vivo activity against methicillin-resistant *Staphylococcus aureus* [8–13]. Although these antibacterial properties are now well established [14–16], in modern orthopedics, antimicrobial therapy is primarily indicated in open fractures, not closed ones.

The author also describes encübâr (*Potentilla erecta*) as highly beneficial for fractures [1]. *Potentilla erecta*, known as tormentil, has anti-inflammatory properties and gastrointestinal benefits and is used as a dietary supplement because of its polyphenol and

tannin content [13]. Ibn-i Sharif may have used this plant for its anti-inflammatory effects; however, suppressing early inflammation contradicts current orthopedic knowledge emphasizing preservation of the initial inflammatory response.

The author further claims that Mugâs-ı Irakî (*Rheum ribes*) is uniquely effective for fractures when ingested or applied as a poultice [1]. Modern studies have shown that *Rheum ribes* has antimicrobial, antiviral, antifungal, anti-diabetic, anticancer, anti-inflammatory, antioxidant, and gastroprotective properties [20]. However, its use for accelerating fracture healing is not supported by modern orthopedic knowledge.

Another plant, *Saponaria officinalis*, is recommended topically and orally to accelerate fracture healing, supposedly within days [1]. *Saponaria officinalis* exhibits antioxidant and other biological activities and has been studied in the context of osteoporosis [21]. Nevertheless, as with *Rheum ribes*, claims of rapid fracture healing conflict with current scientific understanding.

Cruciata laevipes (Mâmîrân), described as capable of correcting malunited fractures when consumed for several days, is another example [1]. Modern data identify *Cruciata laevipes* primarily as an anti-rheumatic agent [22], with no evidence of fracture-related effects.

Nutritional Recommendations and Bone Health

Yâdigâr also advises giving “plum juice” to patients with fractures [1]. Modern studies show that dried plums exert beneficial effects on bone health, largely attributed to their phenolic compounds. Experimental data indicate that dried plums enhance bone formation by modulating signaling pathways affecting osteoblast and osteoclast differentiation, while also inhibiting bone resorption [6]. This suggests that Ibn-i Sharif recognized the importance of nutrition in fracture healing. Considering historical environmental conditions, he may have recommended the most accessible nutrient source of his time. How he acquired knowledge that aligns with current scientific data remains unclear—possibly through older medical texts that have not survived.

The text further recommends foods such as cev-âv (*Rheum officinale*), isfenâh aşı (*Spinacia oleracea*),

and mâş aşı (*Vigna radiata*), prepared with almond oil [1]. Spinach is known for its rich iron content and its abundance of vitamins (A, C, E) and minerals such as magnesium, manganese, calcium, and folate [17, 18]. It supports hematologic function and bone strength. Likewise, *Vigna radiata* is an excellent source of protein and essential amino acids and contributes to bone health due to its iron and calcium content [19]. Thus, these nutritional recommendations remain valid today.

Fracture Reduction and Management of Contusions

The initial management of fractures and dislocations described in *Yâdigâr*—reduction and immobilization for fractures, and repositioning for dislocations—aligns with modern orthopedic principles [1]. Fractures disturb biomechanical integrity, triggering biological responses such as bone resorption and callus formation [23]. Thus, Ibn-i

TABLE 1. Comparative Overview of Ibn-i Sharif’s Recommendations and Modern Clinical Practice

Ibn-i Sharif’s Recommendation	Modern Clinical Approach
Bloodletting is advised following a fracture.	Blood loss may impair fracture healing; therefore, bloodletting is contraindicated. Blood transfusion is reserved for clinically indicated cases.
Cupping is recommended to redirect blood toward another region.	Preservation of the fracture-associated hematoma is preferred when possible; surgical evacuation is performed only under specific clinical indications.
Consumption and topical application of rhubarb root (<i>Rheum officinale</i>) are recommended.	<i>Rheum officinale</i> possesses anti-inflammatory and antibacterial properties; its use requires cautious dosing due to potential systemic effects.
The patient is advised to drink plum juice.	Dried plums have been shown to stimulate osteoblast activity, and their beneficial impact on bone metabolism is supported by contemporary scientific evidence.
Decoction of five-finger herb (<i>Potentilla erecta</i>) is consumed.	Although it exhibits anti-inflammatory properties, its direct contribution to fracture healing remains limited.
Spinach and green lentils cooked with almond oil are consumed.	These foods provide iron, calcium, and phosphate, contributing to improved bone mineralization and overall skeletal health.
A poultice prepared with rose oil, narcissus oil, or chamomile oil is applied to the injured area.	Their antioxidant and moisturizing effects may support soft-tissue healing and reduce local inflammation.
In fractures, bone fragments are repositioned and bandaged; in dislocations, the joint is manually reduced.	Fracture and dislocation management is based on anatomical reduction and immobilization, guided and confirmed by modern imaging techniques.
Mugās al-‘Irāqī (<i>Rheum ribes</i>) is used topically as a poultice.	It possesses antibacterial and anti-inflammatory effects; careful local application is recommended.

Table note: This comparative table demonstrates how several traditional therapeutic approaches described by Ibn al-Sharīf parallel or diverge from contemporary evidence-based orthopedic practice. While certain herbal preparations historically recommended for fractures and soft-tissue injuries have shown biologically plausible anti-inflammatory or antibacterial activity, modern clinical management emphasizes controlled pharmacological dosing, preservation of fracture hematoma, and radiologically guided reduction. Nutritional recommendations described in medieval medical texts also show partial alignment with current knowledge on micronutrients and bone metabolism.

Sharif's recommendations in these instances correspond well with current practice.

For contusions, Yâdigâr recommends rose oil, soft dressings, fresh cheese, mung bean flour, and mixtures containing myrtle, narcissus oil, iris oil, chamomile, and rue [1]. Rose water is now known for its antibacterial properties, and inflammation remains a protective physiological response to tissue injury [24]. Narcissus oil provides moisturizing and antioxidant effects [25, 26]. These treatments appear consistent with modern localized care for soft tissue injuries.

Historical and Ethnopharmacological Perspectives

Levey [27] demonstrated that medieval Arabic pharmacology significantly influenced European medical thought, highlighting the transitional role of herbal therapy in the development of modern pharmacology. Accordingly, the botanical content of Yâdigâr should be interpreted within this historical continuum.

Overall, Ibn-i Sharif emphasizes pharmacological treatments over surgical interventions in cases of fractures, dislocations, and contusions. Table 1 provides a comparative overview of Ibn-i Sharif's key therapeutic recommendations and their alignment with contemporary orthopedic and pharmacological knowledge.

This work establishes an interdisciplinary bridge between medical history, pharmacology, orthopedics, and ethnopharmacology. It contextualizes Ibn-i Sharif's observations within the sociocultural and medical environment of his time and highlights the potential contribution of traditional botanical knowledge to modern scientific inquiry.

The content of the fifth chapter of Yâdigâr illustrates that such works functioned not only as medical manuals but also as vehicles of cultural knowledge transmission [28]. While critical evaluation of medical texts emerged in Western medicine in the 16th century, such systematic scrutiny was less prominent in Eastern societies [29].

Strengths and Limitations

This study presents a unique interdisciplinary analysis bridging medical history, pharmacology, and orthopedics by examining one of the earliest Turkish-language medical texts. By systematically comparing

Ibn-i Sharif's 15th-century therapeutic recommendations with contemporary ethnopharmacological evidence, the work demonstrates how traditional medical knowledge can inform modern scientific inquiry. The integration of historical textual analysis with current pharmacological data provides a methodological framework for evaluating premodern medical practices and highlights the intellectual continuity between classical Islamic medicine and modern therapeutic approaches.

However, this review is limited by the interpretive nature of the historical text. Ibn-i Sharif's descriptions may contain metaphorical language or terminology specific to his era, complicating direct comparison with modern medicine. Additionally, the study relies on literature review without experimental or clinical testing; while modern data regarding plant effects are cited, their direct historical efficacy cannot be evaluated. Moreover, retrospective interpretation of historical medical texts is inherently speculative: modern scientific concepts did not exist at the time of writing, and any correspondence between premodern recommendations and contemporary pharmacological findings should be regarded as conceptual parallel rather than as evidence of causal or clinical equivalence.

CONCLUSION

The therapeutic recommendations in the fifth chapter of Yâdigâr demonstrate Ibn-i Sharif's remarkable knowledge of herbal medicine and musculoskeletal treatments for the 15th century. This review confirms that many of his botanical remedies align with contemporary ethnopharmacological research, reflecting a medical tradition grounded in both empirical observation and inherited knowledge. Works such as Yâdigâr serve as valuable resources for understanding the intellectual foundations of Ottoman medicine and its contributions to the development of modern medical thought.

Ethics Approval and Consent to Participate

Since the present study is based solely on the analysis of historical texts and openly accessible archival materials, it does not require approval from an ethics committee.

Data Availability

All data generated or analyzed during this study are included in this published article. The data that support the findings of this study are available on request from the corresponding author, upon reasonable request.

Authors' Contribution

Study Conception: YMD, OA; Study Design: YMD, OA; Supervision: YMD, OA; Funding: N/A; Materials: N/A; Data Collection and/or Processing: GEK, OA; Statistical Analysis and/or Data Interpretation: GEK; Literature Review: YMD, GEK; Manuscript Preparation: YMD, OA; and Critical Review: GEK.

Conflict of Interest

The author(s) disclosed no conflict of interest during the preparation or publication of this manuscript.

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Artificial intelligence (AI)-based tools were used during the preparation of this manuscript solely for language editing, grammar correction, and translation purposes. The authors confirm that all scientific content, including study design, data collection, analysis, interpretation, and conclusions, was developed independently by the authors. The authors take full responsibility for the accuracy, integrity, and originality of the work. The all content of the study was produced by the author(s) in accordance with scientific research methods and academic ethical principles.

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