

Plants used as painkiller in folk medicine in Turkey – III: Rheumatic pain

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ABSTRACT: There are many plants used by the public in the treatment of various diseases in Turkey. The folk remedies prepared with these plants from which treatment and how they used have been reached to day-to-day by transferring the generations. The traditional treatment methods are recorded by ethnobotanical researches and it is aimed to contribute to drug development studies. In this study, which was prepared by screening of ethnobotanical researches, 72 taxa which used in traditional treatment against rheumatic pain in Turkey are reached and the scientific and local names, families, used parts of these taxa and the use forms in rheumatic pain were compiled. According to the research done, families that are commonly used for rheumatic pain are Ranunculaceae (8 taxa), Asteraceae (5 taxa), Brassicaceae (5 taxa), Lamiaceae (5 taxa), Apiaceae (4 taxa) and Liliaceae (4 taxa). The plants used for rheumatic pain contain analgesic, anti-inflammatory, antiseptic and rubefian compounds. Rubefian compound containing species are applied externally to the rheumatoid region and act by increasing the blood supply of the region. Analgesic, anti-inflammatory and antiseptic active species are used in the form of decoction / infusion both internally and externally.

KEYWORDS: Rheumatic pain; Traditional treatment; Medicinal plants; Turkey.

1. INTRODUCTION

Pain is an important health problem that affects millions of people every year and develops due to various causes and has a negative impact on quality of life. International health care organizations have defined pain as a sign of disease [1]. It is also accepted that pain is a disease in itself [2].

Turkey has a great diversity in terms of climate and geographical conditions. This diversity brings the advantage of having a rich plant cover. Approximately eleven thousand plant species are growing in our country, and three thousand of them are endemic [3-5]. From the early ages, the plants are used by people as food or to prevent health problems. Medicinal plants, which have been traditionally used by the public at the time, are recorded with ethnobotanical investigations. Such studies are a very important source of information for drug research. Folk medicine has an important place both in the world and in our country in health field. Traditional treatment is frequently used in the treatment of diseases, especially in less developed regions. In this study, plants which have traditionally been used as painkillers in Turkey have been identified by screening ethnobotanical studies. The findings are classified according to pain types and will be published as an article series. This study, which is third article of series, contains the plants used against rheumatic pain.

Diseases that cause swelling, pain, restriction of movement, and various disorders in the internal organs are called rheumatism. Factors such as genetic, age, gender, some medications, accidental injuries, climate, some diseases affect the pattern and severity of the disease. Rheumatism is divided into two, as inflammatory and non-inflammatory. Inflammatory rheumatism is the rheumatism caused by microbes that break down the immune system. In non-inflamed rheumatism, thinning and erosion occurs in the joints. Bone peel may occur. It can be caused by an accident.

Rheumatic diseases can be divided into 4 groups depending on where they are:

- Soft tissue rheumatism (the most important and most common type.)
- Rheumatoid arthritis
- Internal organ rheumatism
- Multiple facts [6].

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Rheumatic symptoms are distinguished by the following seven characteristics: 1. pain or discomfort, usually perceived in the vicinity of one or more joints (including the spine); 2. pain on motion of the affected area(s); 3. soreness (to the touch) of the affected region(s); 4. stiffness of the affected part(s), especially after a period of immobility; 5. symptomatic improvement after mild exercise, but worsening after vigorous exercise; 6. symptomatic worsening in response to climatic factors, especially falling barometric pressure and rising humidity; 7. symptomatic improvement in response to warming the affected area(s). Not all rheumatic pain syndromes have all seven characteristics, but most will at least have the first four. Rheumatic pain is almost always localized. It may be localized to one region of the body (e.g., one shoulder girdle) or to a single structure at multiple sites (e.g., the peripheral joints) [7].

Once the underlying cause of the disease is diagnosed in rheumatism treatment, the appropriate treatment method is determined. Analgesic and anti-inflammatory drug groups are preferred for rheumatic pain. Due to various side effects, drug interactions and high cost in synthetic drugs, interest in herbal medicines is increasing day by day. Among the population, the variety of plants used against rheumatic pain is quite high.

2. RESULTS

In this study, 72 taxa were obtained against various rheumatic pain in various regions of Turkey. Scientific names, families, local names, used parts and usage of these taxa are shown in Table 1.

Table 1. The plants used in traditional treatment against rheumatic pain in Turkey.

| Botanical name | Family | Local name | Plant part used | Preparation, administration and use | Ref. |
|--|---------------|--|-----------------|--------------------------------------|--------------|
| <i>Anemone coronaria</i> L. | Ranunculaceae | Lale, Yelotu | Flower | Ext. to rheumatic area | [8] |
| <i>Apium graveolens</i> L. | Apiaceae | Kereviz | Seed and leaf | Dec. | [9] |
| <i>Arctium minus</i> (Hill.) Bernh. subsp. <i>pubens</i> (Bab.) Arenes | Asteraceae | Kuncurk, Belg misek, Acı kalabak, Kalağan | Leaf | Ext. to rheumatic area | [10; 11; 12] |
| <i>Arum elongatum</i> Steven | Araceae | El kabartan, Gavur otu, Kabarcık, Kabarağı, Yılançık, Yılan dili | Root | Ext. to rheumatic area | [13] |
| <i>Artemisia spicigera</i> C.Koch | Asteraceae | Gıyabend | Aerial part | Dec., Int. | [10] |
| <i>Brassica elongata</i> Ehrh | Brassicaceae | Hardal otu, İstapan | Seed | Mush, Ext. to rheumatic area | [14] |
| <i>B. oleracea</i> L. var. <i>acephala</i> DC. | Brassicaceae | Karalahana, Pali | Leaf | Heated, Ext. to rheumatic area | [5] |
| <i>B. rapa</i> L. var. <i>rapa</i> | Brassicaceae | Şalgam | Root | Grated, Ext. to rheumatic area | [16] |
| <i>Bryonia alba</i> L. | Cucurbitaceae | Yer kabağı | Tuber | Ext. to rheumatic area | [11; 19] |
| <i>Capparis spinosa</i> L. var. <i>spinosa</i> | Capparaceae | Gebere, Gevil, Kapari, Kebere | Leaf | Ext. to rheumatic area | [8; 18] |
| <i>Caucalis platycarpus</i> L. | Apiaceae | Pıtrak, Bitrak, Dügünotu | Aerial part | Crushed, Ext. to rheumatic area | [19] |
| <i>Cistus laurifolius</i> L. | Cistaceae | Yavşanak, Tavşanak, Tavşancık, Ladenotu, İldon, Murt | Leaf | Crushed, Mush Ext. to rheumatic area | [20] |

Table 1. (Continued) The plants used in traditional treatment against rheumatic pain in Turkey.

| Botanical name | Family | Local name | Plant part used | Preparation, administration and use | Ref. |
|--|---------------|--|-----------------|---|-------------|
| <i>C. salvifolius</i> L. | Cistaceae | Tavşanak, Tavşancık | Leaf | Crushed, Mush, Ext. to rheumatic area | [20] |
| <i>Clematis flammula</i> L. | Ranunculaceae | Manzaotu, Bahar | Aerial part | Ext. to rheumatic area | [17] |
| <i>C. vitalba</i> L. | Ranunculaceae | Karabağ, Deli asma, Diş otu, Sarmaşık, Kedi bağırsağı, Akbağ, Akçabağ | Stem bark | +Olive oil, Waited, Ext. to rheumatic area | [11] |
| <i>Colchicum speciosum</i> Steven | Liliaceae | Vargit, Kalkgit, Çumak, Zumak | Seed | Crushed, Ext. to rheumatic area | [21] |
| <i>Cynodon dactylon</i> (L.) Pers. var. <i>dactylon</i> | Poaceae | Beygit otu, Ayrık otu, Bırcırgan, Eklem otu | Aerial part | Dec., Int. | [13] |
| <i>C. dactylon</i> (L.) Pers. var. <i>villosus</i> Regel | Poaceae | Ayrık, Ayrık otu | Rhizome | Dec., Int. | [11] |
| <i>Daphne mucronata</i> Royle | Thymelaeaceae | Tevri | Stem bark | Crushed, Cooked, Mush, Ext. to rheumatic area | [22] |
| <i>Dioscorea communis</i> (L.)Caddick & Wilkin | Dioscoreaceae | Dolanbaç, Acı filiz, Acı ot, Adem otu, Akıllı sarmaşık, Köpek üzümü | Root | Grated, Ext. to rheumatic area | [13] |
| <i>Diplotaenia cachrydifolia</i> Boiss. | Apiaceae | Siyabu | Root | Dec., Int. | [10; 22] |
| <i>Echium italicum</i> L. | Boraginaceae | Kuşkonmaz diken | Aerial part | Ext. to rheumatic area | [17] |
| <i>Equisetum arvense</i> L. | Equisetaceae | Su otu, Kırk kilitliot, Minarecik, At kuyruğu, Eklemeli ot, Eklice otu, Kırkkilit, Kilit otu, Mide otu | Aerial part | Dec., Ext. to rheumatic area | [13] |
| <i>Eryngium bithynicum</i> Boiss. | Apiaceae | Boğa diken | Aerial part | Dec., Ext. to rheumatic area | [23] |
| <i>Eucalyptus camaldulensis</i> Dehnh. | Myrtaceae | Okalıptus, Sulfata | Leaf | Essential oil, Ext. to rheumatic area Dec., Ext. to rheumatic area | [8] [24] |
| <i>Fritillaria acmopetala</i> Boiss. subsp. <i>wendelboi</i> Pax | Liliaceae | Ağlayan gelin | Bulb | Cooked, Mush, Ext. to rheumatic area | [25] |
| <i>Galium aparine</i> L. | Rubiaceae | Yapışkan otu | Whole plant | Inf., Int. | [18] |
| <i>Hordeum murinum</i> L. | Poaceae | Kılçık otu, Arpa | Aerial part | Dec., Ext. to rheumatic area | [26] |

Table 1. (Continued) The plants used in traditional treatment against rheumatic pain in Turkey.

| Botanical name | Family | Local name | Plant part used | Preparation, administration and use | Ref. |
|---|---------------|---|-----------------|--|---------------------------------|
| <i>Hypericum perforatum</i> L. | Hypericaceae | Sarı kantaron, Kanter çiçeği, Alaçay, Boyalık otu, Çayotu, Kantarot | Aerial part | Crushed in olive oil, Ext. to rheumatic area | [27; 28; 29] |
| <i>Juglans regia</i> L. | Juglandaceae | Ceviz | Fruit | Dec., Ext. to rheumatic area Mush, Ext. to rheumatic area Dec., Ext. to rheumatic area Ext. to rheumatic area | [8] [15] [19] [16; 13] |
| <i>Laurus nobilis</i> L. | Lauraceae | Akdeniz defnesi, Tenel, Tehnel, Defne | Seed Oil | Crushed, +Honey, Eaten Ext. to rheumatic area | [27; 30] [31] |
| <i>Lavandula officinalis</i> Chaix | Lamiaceae | Lavanta | Aerial part | Inf. | [32] |
| <i>Linum usitatissimum</i> L. | Linaceae | Keten | Seed | +Milk, Ext. to rheumatic area | [33] |
| <i>Matricaria aurea</i> (Loefl.) Sch.Bip. | Asteraceae | Beybunıc, Gayeka seva, Gihake seva, Çiçeğe zer | Aerial part | Mush, Ext. to rheumatic area | [34] |
| <i>M. chamomilla</i> L. | Asteraceae | Bopatça, Papatça, Papatya, Keloğlan çiçeği | Flower | Inf., Ext. to rheumatic area | [13] |
| <i>Medicago rigidula</i> (L.) All. var. <i>rigidula</i> | Fabaceae | Çakırdikeni | Aerial part | Dec., Int./Mush, Ext. to rheumatic area | [18] |
| <i>Mentha longifolia</i> (L.) Hudson subsp. <i>longifolia</i> | Lamiaceae | Nane, Su nanesi, Deli nana, Yarpuz, Kokulu nane | Leaf | Mush, Ext. to rheumatic area | [9] |
| <i>Opuntia ficus-indica</i> (L.) Miller | Cactaceae | Lap inciri, Dikenli yemiş, Eşek dikeni, Kaynana dili | Leaf | Dec., Int. | [13] |
| <i>Paeonia peregrina</i> Mill. | Paeoniaceae | Ay gülü, Beşparmak, Dolaman, Geyik lalesi, Top lale | Root | Ext. to rheumatic area | [13] |
| <i>Pinus nigra</i> Am. subsp. <i>pallasiana</i> (Lamb.) Holmboe | Pinaceae | Karaçam | Resin | +Milk, Cooked, Ext. to rheumatic area | [23] |
| <i>Pistacia khinjuk</i> Stocks | Anacardiaceae | Gezan, Bittim | Gum | Ext. to rheumatic area | [34] |

Table 1. (Continued) The plants used in traditional treatment against rheumatic pain in Turkey.

| Botanical name | Family | Local name | Plant part used | Preparation, administration and use | Ref. |
|--|----------------|---|-----------------|--|-------------|
| <i>P. terebinthus</i> L. subsp. <i>terebinthus</i> | Anacardiaceae | Çitlembik, Çitlemik, Çetlemik | Seed | Oil, Ext. to rheumatic area | [35] |
| <i>Platanus orientalis</i> L. | Platanaceae | Çınar | Leaf | Inf., Int. Dec., Int. | [9] [13] |
| <i>Primula acaulis</i> (L.) L. | Primulaceae | Zimbon otu, Menekşe | Flower | Crushed | [21] |
| <i>Prunus spinosa</i> L. | Rosaceae | Ekşi erik, Dağ eriği | Fruit | Compote, Int. | [36] |
| <i>Ranunculus arvensis</i> L. | Ranunculaceae | Su pıtrağı, Başdırnağı, Pıtrak, Sarı pıtrak | Aerial part | Crushed, Ext. to rheumatic area | [20] |
| <i>R. constantinopolitanus</i> (DC.) Dá'urv. | Ranunculaceae | Çınarcık, Gağcak, Sakız otu | Leaf | Mush, Ext. to rheumatic area | [37] |
| <i>R. kotschyi</i> Boiss. | Ranunculaceae | Sarı çiçek | Leaf | Mush, Ext. to rheumatic area | [22] |
| <i>R. muricatus</i> L. | Ranunculaceae | Çayır otu | Aerial part | Crushed, Ext. to rheumatic area | [27] |
| <i>R. pinardii</i> (Stev.) Boiss. | Ranunculaceae | Gazyacağı otu, Karaz | Aerial part | Crushed, Ext. to rheumatic area | [38] |
| <i>Raphanus sativus</i> L. | Brassicaceae | Turp, Yabani turp otu, Deli turp otu, Karaturp | Root | Grated, Ext. to rheumatic area | [39] |
| <i>Rosmarinus officinalis</i> L. | Lamiaceae | Biberiye, kisre | Leaf | Cooked, Ext. to rheumatic area | [40; 41] |
| <i>Rubus sanctus</i> Schreber | Rosaceae | Böğürtlen, Börtlen, Orman üzümü, Orman gülü, Kür, Kocagız kürü | Flower | Inf., Int. | [9] |
| <i>Salix alba</i> L. | Salicaceae | Söğüt | Leaf | Ext. to rheumatic area | [18] |
| <i>S. viminalis</i> L. | Salicaceae | Söğüt | Leaf | Dec., Int. | [39] |
| <i>Sambucus ebulus</i> L. | Caprifoliaceae | Otsu mürver, Yir otu, Ayıboğan, Şahmelek otu, Piran, Lüver, Lor, Mürver, Memer, Sultan otu, Buzka | Leaf | + <i>Hederae helicis</i> folium Inf., Ext. to rheumatic area | [30] |
| | | | Root | Crushed, Ext. to rheumatic area | [37] |
| | | | Aerial part | Dec., Ext. to rheumatic area | [27; 33] |
| <i>S. nigra</i> L. | Caprifoliaceae | Sıltan otu, Bızga, Kokar ot, Şahmelik, Lüvor, Melikşah, Deve kulağı | Leafy branch | Cooked, Ext. to rheumatic area | [11] |

Table 1. (Continued) The plants used in traditional treatment against rheumatic pain in Turkey.

| Botanical name | Family | Local name | Plant part used | Preparation, administration and use | Ref. |
|--|---------------|--|-----------------|--|----------------------|
| <i>Sinapis arvensis</i> L. | Brassicaceae | Hardal, Sarı hardal, Kara hardal | Young branch | Chopped, Ext. to rheumatic area | [27] |
| <i>Smilax excelsa</i> L. | Smilacaceae | Acıfiliz | Tuber | Ext. to rheumatic area | [42] |
| <i>Solanum melongena</i> L. | Solanaceae | Patlıcan | Fruit stalk | Cooked in water, Sediment +Olive oil, Ext. to rheumatic area | [43] |
| <i>Tamus communis</i> L. | Dioscoreaceae | Tarla sarmaşığı, Kır sarmaşığı, Çertlemik, Sincan, Acıot, Ölüm körü | Whole plant | Ext. to rheumatic area | [44] |
| | | | Rhizome | Crushed, Ext. to rheumatic area | [31] |
| <i>T. communis</i> L. subsp. <i>cretica</i> (L.) Kit Tan | Dioscoreaceae | Sarmaşık, Yandıran, Tilki üzümü | Fruit | Ext. to rheumatic area | [11] |
| | | | Root | Cuttet, Ext. to rheumatic area | [24] |
| <i>Teucrium chamaedrys</i> L. subsp. <i>sinuatum</i> (Celak) Rech.F. | Lamiaceae | Keselmehmut, Derman | Aerial part | Eaten | [22] |
| <i>Thymbra spicata</i> L. var. <i>spicata</i> | Lamiaceae | Seyil kekiği, Kara kekik, Karaçekme, Zahter, Bayır kekiği, Karabaş otu, Kaya kekiği, Şeker otu | Aerial part | Inf., Int. | [13] |
| <i>Tilia argentea</i> Desf. ex. DC. | Tiliaceae | İhlamur | Cortex | Heated, Ext. to rheumatic area | [9] |
| <i>Urginea maritima</i> (L.)Baker | Asparagaceae | Şalgaba, Yakıcı soğan | Bulb | Core, Ext. to rheumatic area | [24] |
| | | | | Ext. to rheumatic area | [23] |
| <i>Urtica dioica</i> L. | Urticaceae | Acı ısırgan, Büyük ısırgan otu, Gezınk, Cızlağan, Dızlağan, Koprıga | Leaf | Ext. to rheumatic area/Dec., Ext. to rheumatic area | [30; 22; 15; 44; 45] |
| | | | Aerial part | Cooked, Mush, Ext. to rheumatic area | [46] |
| | | | | Ext. to rheumatic area | |
| <i>U. membranacea</i> Poiret | Urticaceae | Isırgan, Karasırgan, Dalan | Aerial part | Cooked, Ext. to rheumatic area | [11] |
| | | | | Ext. to rheumatic area | [8] |

Table 1. (Continued) The plants used in traditional treatment against rheumatic pain in Turkey.

| Botanical name | Family | Local name | Plant part used | Preparation, administration and use | Ref. |
|---|------------------|--|---------------------|---|------|
| <i>U. urens</i> L. | Urticaceae | Cızlağan, Dızlağan, Isırgan, Isıran | Aerial part Leaf | Inf., Int. Crushed, Ext. to rheumatic area | [24] |
| <i>Verbascum cheiranthifolium</i> Boiss. var. <i>cheiranthifolium</i> | Scrophulariaceae | Masicerk, Bozkulak, Gırç, Calba, Yalangi | Leaf | Crushed/ Cooked, Mush, Ext. to rheumatic area | [10] |
| <i>V. oreophilum</i> C. Koch var. <i>joannis</i> (Bords) Hub.- Mor. | Scrophulariaceae | Masicerk | Leaf | Crushed/ Cooked, Mush, Ext. to rheumatic area | [10] |
| <i>V. pyramidatum</i> M. Bieb. | Scrophulariaceae | Masicerk | Leaf | Crushed/ Cooked, Mush, Ext. to rheumatic area | [10] |

Int: Internal, Ext: External, Inf: Infusion, Dec: Decoction

Because of its geographical features, Turkey has a very dense plant variety and the use of medicinal plants for the treatment of various diseases among the public since ancient times is widespread. Traditional treatment methods are recorded through ethnobotanical researches and it is aimed to contribute to drug development studies. This study, prepared by screening of ethnobotanics researches, revealed 72 taxa that were used against rheumatic pain among the population. These plants are mainly from Ranunculaceae, Asteraceae, Brassicaceae, Lamiaceae, Apiaceae, Liliaceae (Figure 1). Ranunculaceae family contains alkaloids, cardiac and cyanogenetic glycosides; Asteraceae contains volatile oil; Brassicaceae contains mustard-oil glycosides, mucilage and fixed oil; Lamiaceae contains volatile oil; Apiaceae contains volatile oil, coumarins, terpenes and sesquiterpenes, triterpenoid saponins and acetylenic compounds; Liliaceae contains alkaloids, sterols, cardenolides, bufadienolides, steroidal saponins, flavonoids and volatile oil [47]. In these families, some plants contains toxic compounds. But they are usually used externally.

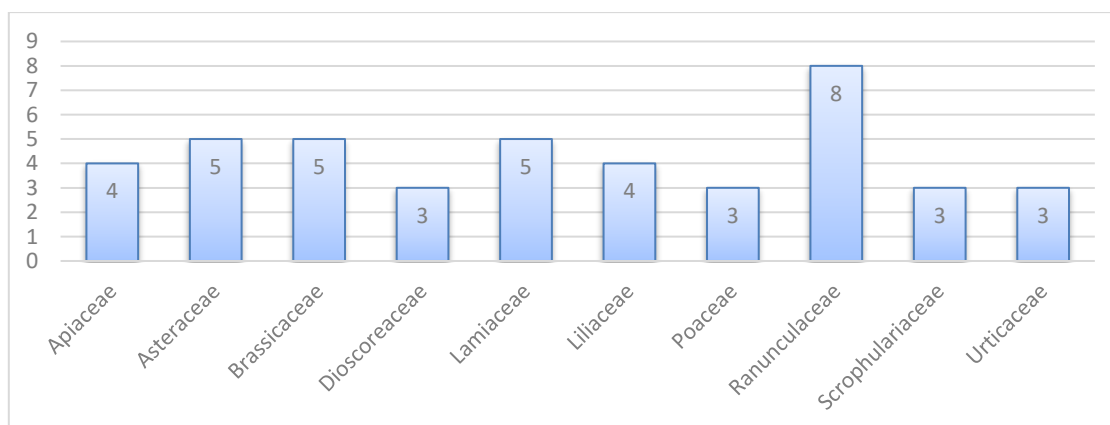


Figure 1. Main families used in traditional treatment against rheumatic pain in Turkey.

Reasons of the usage of plants for the treatment of rheumatoid arthritis is that they contain analgesic, anti-inflammatory, antiseptic, diuretic and rubefacient compounds. For example, the Ranunculaceae family of plants are usually poisonous and contain intensely diverse rubefian substances. Plants containing rubefian compounds (eg Ranunculaceae, Scrophulariaceae, Liliaceae, Dioscoreaceae plants) are applied externally to the rheumatoid area and act by increasing the blood supply of the region. In addition, species exhibiting analgesic, anti-inflammatory (eg *Salix alba* L.) and antiseptic activity (eg Asteraceae, Lamiaceae, Apiaceae, Urticaceae plants) are also used as decoction / infusion both internally and externally to relieve rheumatic pain. We hope that our study will contribute to new drug development studies that can be used for rheumatic pain.

3. MATERIAL AND METHODS

This study is prepared by searching MSc and PhD theses at the National Higher Education Center and ethnobotanical surveys conducted in various parts of the Turkey with selecting regional plants used for rheumatic pain.

Author contributions: Concept – M.Ş.E., S.A., G.M.; Design – M.Ş.E., S.A., G.M.; Supervision – M.Ş.E., S.A., G.M.; Resource – M.Ş.E., S.A., G.M.; Materials – M.Ş.E., S.A., G.M.; Data Collection and/or Processing M.Ş.E., S.A., G.M.; Analysis and/or Interpretation - M.Ş.E., S.A., G.M.; Literature Search – M.Ş.E., S.A., G.M.; Writing – M.Ş.E., S.A., G.M.; Critical Reviews – M.Ş.E., S.A., G.M.

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