



Achillea maritima (L.) Ehrend. & Y.P.Guo. *Achillea millefolium* L.

ASTERACEAE

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Synonyms

***Achillea ageratum* L.:** *Achillea viscosa* Lam.; *Conforata ageratum* Fourr.; *Santolina ageratum* Baill. (WFO 2023a).

***Achillea aleppica* DC.:** *Achillea aleppica* f. *aleppica*; *Achillea aleppica* var. *aleppica* (WFO 2023b).

***Achillea falcata* L.:** *Achillea cristata* Retz.; *Achillea damascena* DC.; *Achillea falcata* var. *breviradiata* Boiss.; *Achillea falcata* var. *falcata*; *Achillea sulphurea* var. *sulphurea*; *Ceratocephalus falcatus* (L.) Pers.; *Ceratocephalus falcatus* subsp. *falcatus*; *Ceratocephalus falcatus* var. *falcatus*; *Ptarmica cristata* DC.; *Santolina falcata* Baill. (WFO 2023c).

***Achillea fragrantissima* (Forssk.) Sch.Bip.:** *Santolina fragrantissima* Forssk.; *Santolina simplicifolia* L'Hér. ex DC. (WFO 2023d).

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***Achillea leptophylla* M. Bieb.:** *Achillea leptophylla* f. *leptophylla*; *Achillea leptophylla* f. *retezutensis* Prodan; *Achillea leptophylla* subsp. *leptophylla*; *Achillea leptophylla* subsp. *spithamea* (Coss. & Durieu) Maire; *Achillea leptophylla* var. *leptophylla*; *Achillea leptophylla* var. *major* (Batt.) Maire; *Achillea spithamea* var. *major* Batt.; *Achillea spithamea* var. *spithamea*; *Achillea taurica* M.Bieb. (WFO 2023e).

***Achillea maritima* (L.) Ehrend. & Y.P.Guo.:** *Dicoma candidissima* Desf.; *Diotis maritima* (L.) Desf. ex Cass. (WFO 2023f).

***Achillea millefolium* L.:** *Achillea albicaulis* C.A. Mey.; *Achillea albida* Willd.; *Achillea alpicola* (Rydb.) Rydb.; *Achillea ambigua* Pollini; *Achillea ambigua* Boiss.; *Achillea anethifolia* Fisch. ex Herder; *Achillea angustissima* Rydb.; *Achillea arenaria* A. Heller; *Achillea arenicola* A. Heller; *Achillea bicolor* Wender.; *Achillea borealis* Bong.; *Achillea borealis* var. *arenicola* (A. Heller) J.T. Howell; *Achillea borealis* subsp. *Arenicola* (A. Heller) D.D. Keck; *Achillea borealis* subsp. *californica* (Pollard) D.D. Keck; *Achillea borealis* var. *californica* (Pollard) J.T. Howell; *Achillea borealis* f. *fusca* (Rydb.) Hultén; *Achillea borealis* var. *fusca* (Rydb.) G.N. Jones; *Achillea borealis* subsp. *typica* D.D. Keck; *Achillea californica* Pollard; *Achillea compacta* Lam.; *Achillea coronopifolia* Willd.; *Achillea crassifolia* Steud.; *Achillea crassifolia* Dietr. ex Colla; *Achillea cristata* DC.; *Achillea cuspidata* Wall.; *Achillea dentifera* DC.; *Achillea dentifera* Rchb.; *Achillea eradiata* Piper; *Achillea fusca* Rydb.; *Achillea gigantea* Pollard; *Achillea gracilis* Raf.; *Achillea haenkeana* Tausch; *Achillea intermedia* Schleich.; *Achillea lanata* Spreng.; *Achillea lanata* Lam.; *Achillea lanulosa* Nutt.; *Achillea lanulosa* subsp. *alpicola* (Rydb.) D.D. Keck; *Achillea lanulosa* var. *alpicola* Rydb.; *Achillea lanulosa* var. *arachnoidea* Lunell; *Achillea lanulosa* var. *eradiata* (Piper) M. Peck; *Achillea lanulosa* subsp. *megacephala* (Raup) Argus; *Achillea lanulosa* f. *peroutkyi* F. Seym.; *Achillea lanulosa* f. *rubicunda* Farw. *Achillea lanulosa* subsp. *typica* D.D. Keck; *Achillea laxiflora* Pollard & Cockerell; *Achillea magna* Haenke; *Achillea magna* L.; *Achillea magna*; *Achillea marginata* Turcz. ex Ledeb.; *Achillea megacephala* Raup; *Achillea millefolium* f. *albiflora* Dabrowska; *Achillea millefolium* var. *alpicola* (Rydb.) Garrett; *Achillea millefolium* var. *arenicola* (A. Heller) Ferris; *Achillea millefolium* subsp. *atrotegula* B. Boivin; *Achillea millefolium* subsp. *balearica* Sennen; *Achillea millefolium* var. *asplenifolia* (Vent.) Farw.; *Achillea millefolium* var. *borealis* (Bong.) Farw.; *Achillea millefolium* subsp. *borealis* (Bong.) Breitung; *Achillea millefolium* f. *californica* (Pollard) H.M. Hall; *Achillea millefolium* var. *californica* (Pollard) Jeps.; *Achillea millefolium* var. *colliniformis* Dabrowska; *Achillea millefolium* var. *densiloba* P.D. Sell; *Achillea millefolium* var. *dipetala* Dabrowska; *Achillea millefolium* f. *discolor* B. Boivin; *Achillea millefolium* var. *dissecta* Dabrowska; *Achillea millefolium* var. *fulva* B. Boivin; *Achillea millefolium* var. *fusca* (Rydb.) G.N. Jones; *Achillea millefolium* var. *gigantea* (Pollard) Ferris; *Achillea millefolium* var. *gracilis* Raf. ex DC.; *Achillea millefolium* var. *iserana* Podp.; *Achillea millefolium* f. *iserana* Hayek; *Achillea*

millefolium var. *lanata* W.D.J. Koch; *Achillea millefolium* subsp. *lanulosa* (Nutt.) Piper; *Achillea millefolium* var. *lanulosa* (Nutt.) Piper; *Achillea millefolium* var. *litoralis* Ehrend. ex Ferris; *Achillea millefolium* var. *lobata* Dabrowska; *Achillea millefolium* var. *maritima* Dabrowska; *Achillea millefolium* var. *maritima* Jeps.; *Achillea millefolium* var. *megacephala* (Raup) B. Boivin; *Achillea millefolium* var. *nigrescens* E. Mey.; *Achillea millefolium* var. *occidentalis* DC.; *Achillea millefolium* subsp. *occidentalis* (DC.) Hyl.; *Achillea millefolium* var. *pacifica* (Rydb.) G.N. Jones; *Achillea millefolium* subsp. *pallidotegula* B. Boivin; *Achillea millefolium* var. *parviligula* B. Boivin; *Achillea millefolium* subvar. *Parviligulata* Farw.; *Achillea millefolium* var. *parvula* B. Boivin; *Achillea millefolium* f. *pseudopannonica* Pamp.; *Achillea millefolium* var. *puberula* (Rydb.) Ferris; *Achillea millefolium* var. *purpurea* Wirtg.; *Achillea millefolium* f. *rhodantha* Lepage; *Achillea millefolium* var. *rosea* Gray; *Achillea millefolium* f. *roseiflora* B. Boivin; *Achillea millefolium* f. *roseoides* Breitung; *Achillea millefolium* f. *rubicunda* (Farw.) Farw.; *Achillea millefolium* var. *russeolata* B. Boivin; *Achillea millefolium* var. *sordida* W.D.J. Koch; *Achillea millefolium* var. *spathulata* Dabrowska; *Achillea millefolium* var. *sylvatica* Wirtg.; *Achillea nabelekii* Heimerl; *Achillea nigrescens* (E. Mey.) Rydb.; *Achillea occidentalis* (DC.) Raf. ex Rydb.; *Achillea ochroleuca* Eichw.; *Achillea ossica* K.Koch; *Achillea pacifica* Rydb.; *Achillea palmeri* Rydb.; *Achillea pecten-veneris* Pollard; *Achillea pratensis* Saukel & R. Länger; *Achillea pseudotanacetifolia* Wierzb. ex Rchb.; *Achillea puberula* Rydb.; *Achillea rosea* Desf.; *Achillea scabra* Host; *Achillea setacea* Schwein.; *Achillea sordida* (W.D.J. Koch) Dalla Torre & Sarnth.; *Achillea subalpina* Greene; *Achillea subhirsuta* Gilib.; *Achillea submellifolium* Klokov & Krytzka; *Achillea sudetica* Opitz; *Achillea sylvatica* Becker; *Achillea tanacetifolia* Mill.; *Achillea tanacetifolia* var. *dentifera* W.D.J. Koch; *Achillea tenuifolia* Salisb.; *Achillea tenuis* Schur; *Achillea tomentosa* Pursh; *Achillea virgata* DC.; *Achillios millefoliatus* St.-Lag.; *Alitubus millefolium* (L.) Dulac; *Chamaemelum millefolium* (L.) E.H.L. Krause; *Chamaemelum tanacetifolium* E.H.L.Krause; *Millefolium officinale* Gueldenst. ex Ledeb.; *Millefolium vulgare* Gueldenst. ex Ledeb.; *Ptarmica borealis* (Bong.) DC.; *Santolina millefolium* Baill. (WFO 2023g).

***Achillea odorata* L.:** *Achillea microphylla* Willd.; *Achillea odorata* L. subsp. *odorata*; *Achillea odorata* L. subsp. *pectinata* (Lam.) Briq.; *Achillea odorata* L. var. *masclansii* P.Monts.; *Achillea odorata* L. var. *microphylla* (Willd.) Willk.; *Achillea odorata* L. var. *odorata*; *Achillea pectinata* Lam.; *Achillea pubescens* Willd.; *Achillea punctata* Ten. ex Fenzl; *Millefolium odoratum* Fourr (WFO 2023h).

***Achillea tenuifolia* Lam.:** *Achillea kermanica* Gand.; *Achillea krascheninnikovii* Afanassiev; *Achillea microloba* DC.; *Achillea santolina* L.; *Achillea tenuifolia* var. *tenuifolia*; *Anthemis caespitosa* Herbich; *Anthemis pseudoatrata* Schur; *Anthemis tenuifolia* Schur; *Ptarmica tenuifolia* Schur (WFO 2023j).

***Achillea tomentosa* L.:** *Alitubus tomentosus* (L.) Dulac; *Millefolium tomentosum* Fourr. (WFO 2023k).

Local Names

Achillea ageratum L.: **Morocco**: Tarhella (تَرْهَيْلا), karman (كَرْمَان) (Fatiha et al. 2019).

Achillea aleppica DC.: **Palestine**: Kaisoum (قَيْصُوم) (Jaradat et al. 2016a).

Achillea falcata L.: **Jordan**: Kaisoum (قَيْصُوم) (Aburjai et al. 2007; Alzweiri et al. 2011). **Lebanon**: Habbouk (حَبُوق), Qaysoum jabali (قَيْصُوم جَبَلِي) (Arnold et al. 2015). **Syria**: Kaisoum (قَيْصُوم) (Khatib and Nattouf 2021).

Achillea fragrantissima (Forssk.) Sch.Bip.: **Egypt**: Kaisoum (قَيْصُوم) (Eissa et al. 2014). **Jordan**: Kaisoum (قَيْصُوم) (Nawash et al. 2013; Abdelhalim et al. 2017). **Lebanon**: Qaysoum jabali (قَيْصُوم جَبَلِي), Kaisoum (قَيْصُوم) (Marc et al. 2008; Deeb et al. 2013). **Syria**: Alphieh (عَلْفِيَه) (Khatib and Nattouf 2021).

Achillea leptophylla M. Bieb.: **Morocco**: El-qorte (القورْطَه), Shwihya (شُوَيْحِيَه) (Youbi et al. 2016; Belhaj et al. 2020).

Achillea maritima (L.) Ehrend. & Y.P.Guo: **Syria**: Akhelia (أَخْلِيَه) (Khatib and Nattouf 2021).

Achillea millefolium L.: **Morocco**: Mchiwyha (مَشُوَيْحَه), Khala (خالَه), Lqaysoum (لَقَايْصُوم), Louiza lehar (لُوَيْزَه لَهْجَر) (Youbi et al. 2016; Labiad et al. 2020; Najem et al. 2020; Belhaj and Zidane 2021; Ajjoun et al. 2022; Noureddine et al. 2022). **Algeria**: ikhilya (إِخْلِي) (Boudjelal et al. 2013). **Cyprus**: Achillia (Karousou and Deirmentzoglou 2011). **Lebanon**: Akhelia that alf waraka (أَخَالِيَا ذَاتِ الْفِ وَرَقَه) (Deeb et al. 2013). **Syria**: Eshbet alnajarain (عَشْبَةُ النَّجَارَيْن) (Khatib and Nattouf 2021).

Achillea odorata L.: **Morocco**: El-qorte (لقورط), (Alami Merrouni et al. 2021; Belhaj et al. 2021).

Achillea santolinoides Lag.: **Chouihya** (شُوَيْحِيَه), **El-qorte** (لُقُرْط) (Fatiha et al. 2019; Belhaj et al. 2020; Belhaj et al. 2021).

Achillea tenuifolia Lam.: **Lybia**: Zefra (زَفْرَه) (El-Mokasabi 2014; El-mokasabi et al. 2018). **Algeria**: Chayâta (شَيْطَا) (Yamina et al. 2016). **Egypt**: Be'etheran (بِي إِثْرَان) (Eissa et al. 2014). **Jordan**: Jadet Sibian (جَدَةُ الصَّبِيَان) (Kaisoum (قَيْصُوم) (Hudaib et al. 2008; Nawash et al. 2013). **Palestine**: Akhilia (أَخْلِيَه), Qaisoum (قَيْصُوم) (Alachkar et al. 2011; Khatib et al. 2021).

Endemism

These species are not endemic to North of Africa (Oualidi et al. 2012).

Botany and Ecology

Achillea maritima (L.) Ehrend. & Y.P.Guo (Fig. 1)

Achillea millefolium: Perennial. Rhizome slender, creeping, branched; whole plant more or less covered with fine white hairs; stems few or solitary, usually weakly pubescent (finely floccose), (5)20–60(120) cm high, erect or ascending from base, erect, less often flexuous, simple or branched above, cylindrical, finely



Fig. 1 Life form, leaves, and flowers of *Achillea maritima* L. Cap des Trois Fourches in North eastern Morocco. (Photos M. Elachouri)

sulcate, with short leafy branches in axils of upper and middle cauline leaves. Leaves lanceolate, oblong-lanceolate, or almost linear, punctate-alveolate, twice or thrice pinnately cut, with numerous more or less remote segments (1.5–10 mm apart); lower cauline leaves and leaves of nonflowering branches 10–40 cm long, 0.8–5 cm wide, rachis 1–2 mm wide, leaves usually in upper part with solitary teeth between basal segments; lobes and teeth lanceolate, less often linear, 0.5–1.5 mm long, 0.3–0.4(0.5) mm wide, terminating in short cartilaginous cusp. Capitula in numerous, unequal, compound corymbs, 2–15 cm in dia. Involucre oblong to almost ovoid, 3–4(6) mm long, (2)3–4(5) mm in dia; involucre bracts green, carinate, with prominent midrib, membranous along margin, often brownish; bracts ovate to oblong-elliptical, membranous, floccose above, with scattered hairs on dorsal surface. Ligules of outer florets white, pink, or red. (1)2–4 mm long, 1.5–3.0(4.5) mm wide, more or less rotund, 2–3-toothed at apex, limb a half as long as involucre; tubular florets up to 20, glandular-hairy on outside. Flowering July–October. Ural,

Caucasus, Altai, Middle Asia, on dry forest edges, clearings, in open forests, on dry meadows, slopes, railroad embankments, along roads, on the outskirts of fields. (Macbride and Weberbauer 1936–1995) (Figs. 2 and 3).

Fig. 2 *Achillea millefolium* (Asteraceae), Tashkent region, Uzbekistan. (Photo O.K. Khojimatov)



Fig. 3 *Achillea millefolium* (Asteraceae), Tashkent region, Uzbekistan. (Photo O.K. Khojimatov)



Phytochemistry

Carbohydrates (glucose, galactose, arabinose, inositol), organic acids (aconite, amber), essential oils (azulene, caryophyllene, eucalyptol, borneol, bornylacetate, pinene, limonene, a-thujone, terpineol, aljojoen, cadinene, camphene, camphor, copaene, cuminaldehyde, cymol, eugenol, farnesene, furfural, gumulene, isoartemisiacetone, isobutyl acetate, limonene, menthol, myrcene, sabinene, a-terpinene, γ -terpinene, terpinol-4, terpinolene), sesquiterpenoids (acetoxyartabsin, acetylbalkanolide, achillicine, achilline, austriacine, balkhanide, dihydroacetoxymatcine, hydroxyachilline, leucodine, millefine, millepholide), alkaloids (betaine, choline, trigonelline, achilleine), cyanogenic compounds, steroids (sitosterol, sitosterol acetate), phenolic compounds, tannins, phenolcarbonic acids (salicylic, coffee), coumarins, flavonoids (apigenine, luteoline, cosmosyne, artemethine, kasticine, isoramnetine, vitexine, sertizine, orientine, quercetine, isovitoxine, apigenine, isoeryentin, vicenin), fatty acids (myristic, palmitic, stearic, oleic, linoleic), coumarins, terpenoids (azulene, geraniol, citral, menton, carvone, a-thuyone, achilline) (Sokolov 1993).

Local Medicinal Uses

***Achillea ageratum* L.:** In **Morocco**, aerial parts are used in cases of respiratory and digestive problems (Fatiha et al. 2019).

***Achillea aleppica* DC.:** In **Palestine**, infusion of aerial parts is used for liver diseases (Jaradat et al. 2016a).

***Achillea falcata* L.:** In **Jordan**, infusion of aerial parts is used as carminative, depurative, antispasmodic, and for stomachache and fever (Aburjai et al. 2007; Alzweiri et al. 2011). In **Lebanon**, this plant is used for diabetes (Arnold et al. 2015). In **Palestine**, the infusion of plant flowers is used to treat diarrhea (Jaradat et al. 2016b). In **Syria**, this plant is used as a diuretic (Khatib and Nattouf 2021).

***Achillea fragrantissima* (Forssk.) Sch.Bip.:** In **Egypt**, infusion of aerial parts is used as a general analgesic, antihelminthic, antispasmodic, emmenagogue, and for headache, hysteria, and anemia. The plant is used externally for eye diseases (Eissa et al. 2014). In **Jordan**, infusion of aerial parts is used for headaches, diabetes, and colic. It is used also as calmative, anthelmintic, carminative, antispasmodic, and stomachic (Al-Khalil 1995; Abdelhalim et al. 2017). This plant is used also for arthritis, kidney stones, abdominal pains, flatulence, common cold, parasitic worms, and urinary tract infections (Abu-Irmaileh and Afifi 2003). In **Lebanon**, decoction of aerial parts is used for rheumatism. Decoction of flowers and shoots is used for diabetes, inflammations, and stomachache (Marc et al. 2008; Deeb et al. 2013). In **Palestine**, leaves are used as carminative and for skin diseases (Ali-Shtayeh et al. 2000; Jaradat 2005b). In **Syria**, infusion of leaves is used for common cold, hay fever, absence of menstruation, dysentery, diarrhea, loss of appetite, gastrointestinal tract discomfort, and to induce sweating (Khatib and Nattouf 2021). In **Israel**, decoction of leaves and stems are added to bath, patient is immersed for 15 min

for aching joints and fever. Decoction of leaf and stem is used for high blood pressure, stomachaches, and diabetes (Said et al. 2002).

***Achillea leptophylla* M. Bieb.:** In **Morocco**, infusion of aerial parts is used for inflammation, diabetes, allergy, stomachic, and against cancer (Youbi et al. 2016; Belhaj et al. 2020).

***Achillea maritima* (L.) Ehrend. & Y.P.Guo:** In **Syria**, infusion of leaves is used for a cough, varicose veins, menstrual pain, urinary disinfectant, and hemorrhoids. It is used also as anthelmintic and diuretic (Khatib and Nattouf 2021).

***Achillea millefolium* L.:** In **Morocco**, infusion of aerial parts is used to heal stomachic, anorexia, and to lower blood pressure. It is also used as an aperitif and emmenagogue (Belhaj et al. 2020; Belhaj and Zidane 2021). Decoction of flowers and leaves is used orally to treat inflammation, allergy, and cancer. Essential oil is used as an ointment to treat rheumatism (Youbi et al. 2016). Decoction of leaves is used for gingival bleeding. Mastication of roots is used for mouth care and toothache (Najem et al. 2020). In **Algeria**, infusion of flowered tops is used as a tonic (Boudjelal et al. 2013). In **Cyprus**, infusion of leaves and inflorescences is used for hemorrhoids, hypotension, common cold, dysmenorrhea, gynecological disorders, and uterus spasms. It is also used as an antifungal, antiseptic, and diuretic (Karousou and Deirmentzoglou 2011). In **Lebanon**, an infusion of flowers is taken orally to treat cholesterol, ulcers, stomach, and intestinal pains (Deeb et al. 2013). In **Palestine**, leaves are used as antiseptic, astringent, diuretic, carminative, and to stop bleeding (Jaradat 2005a, b). In **Syria**, infusion of flowers and leaves is used for asthma, the common cold, and to treat urinary infections (Khatib and Nattouf 2021). In **Israel**, infusion of leaves and stems is taken orally to treat high blood pressure, stomachaches, and diabetes (Said et al. 2002).

***Achillea odorata* L.:** In **Morocco**, infusion of leaves is used for diabetes, and rheumatism, and as a sexual stimulant (Alami Merrouni et al. 2021; Belhaj et al. 2021).

***Achillea santolinoides* Lag.:** In **Morocco**, infusion of the capitulum is used in the treatment of diabetes and stomachic (Fatiha et al. 2019; Belhaj et al. 2020, 2021).

***Achillea tenuifolia* Lam.:** In **Lybia**, this plant is used for eczema, toothache, diabetes, and ulcer (El-Mokasabi 2014; Al-Traboulsi and Alaib 2021). In **Algeria**, infusion of flowers and leaves is used for tumor diseases, dental and stomach pains, diabetes, and skin pathologies (Yamina et al. 2016). In **Egypt**, aerial parts and roots are used in infusion as analgesic, carminative, stomachic, antihelminthic, anti-inflammatory, and for hysteria (Eissa et al. 2014). In **Jordan**, an infusion of aerial parts is used as an anticolic, carminative, depurative, antispasmodic, and in cases of kidney stones, stomachaches, and diabetes (Al-Khalil 1995; Al-Qura 2008; Hudaib et al. 2008; Al-Qura'n 2009). In **Palestine**, this plant is used as stomachic, carminative, anthelmintic, and expectorant (Jaradat 2005a). In **Syria**, infusion of leaves is used for fever, common cold, absence of menstruation, dysentery, diarrhea, loss of appetite, and gastrointestinal tract discomfort. Flowers are crushed and prepared as tea to treat gallbladder stones, atherosclerosis, cancer, and gastritis (Alachkar et al. 2011; Khatib et al. 2021).

***Achillea tomentosa* L.:** In **Jordan**, infusion of aerial parts is used in cases of stomachache, intestinal colic, and used as carminative (Al-Qura 2008; Al-Qura'n 2009).

Local Medicinal Uses in Other Regions

***Achillea millefolium* L.:** As tea for respiratory ailments (Aziz et al. 2021). Wounds, digestive tract, respiratory system, urogenital system, heart and circulatory system, neurosis, and other neurogenic complaints (Babulka 1993). As medicinal tea (Dolina and Łuczaj 2014). Buds and branches for wound treatment (Gilca et al. 2018). Used also as panacea and tincture of whole plant for bad gums; oral ulcers (aphthae) (Ilic et al. 2017; Kasper-Pakosz et al. 2016). For bleeding wounds, stomachache (Kujawska et al. 2017). Infusion of leaves and flowers as tea (Łuczaj 2012; Łuczaj and Dolina 2015; Luczaj et al. 2015; Mattalia et al. 2020; Sõukand and Pieroni 2016, Sõukand et al. 2014; Stryamets et al. 2020). Tea vessel cleansing, for diarrhea, digestive system problems, stomach, vomiting, disinfectant, hair care, wounds, toothache, as disinfectant (Mattalia et al. 2020). For unspecified diseases (Nedelcheva and Draganov 2014), stomach pain and digestion (Nedelcheva et al. 2017). For inflammatory and wound as wash, bath, and footbath, for cough, liver, and kidney disease, piles, and gastric ulcer. Leaf for cold as a foment; for rheumatism and arthritis as a bath, as a diuretic, for varicose veins in trousers and for waist pain, for kidney stones, for swollen legs, for wounds (wound healing), heart and liver disease, for flatulence, renal pain (Papp et al. 2013, 2014a, b, c, 2016; Petran et al. 2020). For toothache (Sõukand and Pieroni 2016). Tea as bile neutralizer, for gastritis, stomachache. Flowers as panacea, stomachache, female diseases, leaves for cuts and wounds (Sõukand et al. 2017). Tincture for wound treatment, hemostatic, blood coagulation; infusion of leaves, and lowers for blood coagulation (Stryamets et al. 2015). Infusion as Appetizer, antibacterial, anti-inflammatory, vermifuge, spasmolytic, diuretic, emollient, cicatrizing; digestive, pulmonary, and urinary disorders, wounds (Tiță et al. 2009).

In folk medicine, decoction of flowers is used for headaches, colds, dysentery, asthma; it is considered a diuretic and hemostatic agent; dry flowers with honey are used as vermifuge; aerial part (grass) is used when menstruation is delayed, for which the patient is smoked with smoke; external – poultice in case of cut (Sakhobiddinov 1948). Water decoction of the aerial parts of plant, infusion of flowers used for pulmonary tuberculosis, heart diseases, externally pringivitis, laryngitis, stomatitis (Khalimatov 1964; Khojimatov 2021). Used for fever and cold (Gilani et al. 2006), toothache, as tonic, dysentery (Akhtar et al. 2018; Shah and Khan 2006); cough, profuse mucous discharges (Kayani et al. 2014); piles and leukorrhea (Amjad et al. 2017), toothache, earache, tuberculosis, stomach disorders, fever (Ahmad and Habib 2014), as diaphoretic, stimulant, tonic, to treat fever, cold, hemorrhoids, headaches, diuretic, urinary disorders, and menstrual problems (Shaheen et al. 2012), for wound healing, digestion, earache, toothache, tuberculosis (Ahmad et al. 2017); as tonic, astringent, stomachic, fever, cough, diarrhea flu, chest pain, black fever, and cough (Ch et al. 2013), also to treat stomachache (Mahmood et al. 2012). The species has decongestant, astringent, healing, diaphoretic, antipyretic, and anti-inflammatory properties. The whole plant (including flowers) is prepared in infusion and is taken to promote menstruation, as a stimulant and against hemorrhoids. It is also used to relieve the symptoms of indigestion, flatulence, and

colitis. The whole plant is used to treat acne, boils, bot fly infestations, bruises, gallbladder, gastritis, strengthens digestive system, healing wounds, hemorrhage, hemorrhoids, lack of appetite, menstrual colic, nosebleed, skin ulcers, sores, and as analgesic and tonic; the Whole plant, leaves, and flowers are used to treat indigestion, inflammation, spasms, and as emmenagogue; leaves and flowers are used for blood cleansing. The infusion of flowers and roots is used to treat diarrhea and empacho. Fresh flowers and leaves are used to treat gastritis, diabetes, blood, and cholesterol. The plant is also widely used for psychosomatic and nervous system disorders, gastrointestinal problems, liver and gallbladder ailments, and spiritual cleansing, as well as inflammations, and shows antibacterial and antifungal properties. It is also used as remedy for diabetes and cancer. The preparations exhibit low toxicity (Paniagua Zambrana et al. 2020). Species of *Artemisia* are also widely used in the Caucasus (Bussmann et al. 2017; Bussmann 2015). Widely used as wound healing agent and included in a variety of official pharmacopoeia. In the Altai, the leaves are chewed for toothache, and the plants are used as diuretic, antitumor, and wound healing agent. In the Ural, the decoction is used as hemostatic for internal bleeding and nosebleeds, as laxatives, for gastric problems, hemorrhoids, gastritis, stomach ulcers, kidney and urinary diseases, skin diseases, and burns. In Middle Asia, the leaves are used for rheumatism, bronchial asthma, heart disease, kidney disease, as diuretic, hemostatic, and antipyretic as well as anthelmintic, for anemia, diarrhea, and amenorrhea (Liu et al. 2020). Used for digestive problems (Ari et al. 2015). Smoke is applied to treat fever and respiratory tract problems (Mohagheghzadeh and Faridi 2006). An infusion and a decoction of the aerial parts and flowers of *Achillea filipendulina* are used as a treatment for diarrhea, dysentery, gastrointestinal diseases, gynecological diseases, and as an appetizer. To prepare an infusion, one teaspoon of the flowers or aerial parts is infused in 200 ml of boiled water for 15 minutes. For a decoction, two teaspoons of flowers or aerial parts are added to half a liter of water and boiled for 5 min. Sugar and honey are added to change the taste. To treat diarrhea and dysentery, half a glass of the infusion is taken before each meal for 7 days. A decoction of flowers is added to soups and taken in case of diarrhea or dysentery. A bath with a decoction is taken against gynecological diseases, such as colpitis, inflammation of the female genital organs, itching skin or allergy in or around the vagina. To treat gynecological diseases (colpitis), it is used together with *Capparis spinosa* var. *herbacea* L. and *Amaranthus retroflexus* L. It is also used to treat cardiovascular diseases. A decoction of dried flowers is used as a children's digestive aid, and also to treat stomachache and cough (Liu et al. 2020).

***Achillea arabica*:** It is used against headaches, colds, stomachache, ulcers (Tetik et al. 2013). In folk medicine of Uzbekistan, decoction of aboveground mass and flowers is used in gastralgia, pulmonary tuberculosis, hemorrhoids, malaria, flatulency. Externally for stomatitis, gingivitis, laryngitis (Khalmatov 1964; Khojimatov 2021). Used against headaches, colds, stomachache, ulcers (Tetik et al. 2013).

***Achillea carpatica*:** Leaves as tea for digestive system problems, stomach diseases (Mattalia et al. 2020).

***Achillea filipendulina*:** In folk medicine, decoction of flowers is used for headaches, colds, dysentery, asthma; It is considered a diuretic and hemostatic agent; dry flowers with honey are used as clay; grass is used when menstruation is delayed, for

which the patient is smoked with smoke; external – parkas in the event of a cut (Sakhobiddinov 1948). A decoction of the aerial part, an infusion of flowers for pulmonary tuberculosis, heart disease, externally for gingivitis, laryngitis, stomatitis (Khalmatov 1964; Khojimatov 2021). An infusion and a decoction of the aerial parts and flowers of **Achillea filipendulina** are used as a treatment for diarrhea, dysentery, gastrointestinal diseases, gynecological diseases, and as an appetizer. To prepare an infusion, one teaspoon of the flowers or aerial parts is infused in 200 ml of boiled water for 15 min. For a decoction, two teaspoons of flowers or aerial parts are added to half a liter of water and boiled for 5 min. Sugar and honey are added to change the taste. To treat diarrhea and dysentery, half a glass of the infusion is taken before each meal for 7 days. A decoction of flowers is added to soups and taken in case of diarrhea or dysentery. A bath with a decoction is taken against gynecological diseases, such as colpitis, inflammation of the female genital organs, itching skin or allergy in or around the vagina. To treat gynecological diseases (colpitis), it is used together with *Capparis spinosa* var. *herbacea* L. and *Amaranthus retroflexus* L. It is also used to treat cardiovascular diseases. A decoction of dried flowers is used as a children's digestive aid, and also to treat stomachache and cough (Liu et al. 2020; Jan et al. 2021).

Achillea grandiflora: The leaves and the whole plant are used for wound care (Bussmann et al. 2020).

Achillea micrantha: The leaves and the whole plant are used for wound care (Bussmann et al. 2020).

Achillea nobilis: The leaves and whole plant are being used for wounds. The root extract is used to treat rheumatism (Bussmann et al. 2020).

Achillea tenuifolia Lam.: It is under research for its health effects and has supposed uses in traditional medicine for minor ailments. In Iraq and Jordan, an infusion of the leaves of *Achillea tenuifolia* is used for intestinal complications such as intestinal colics, dysentery, and often used as a flatulence reliever. In Turkey, the plant is traditionally used to treat abdominal pain, stomachaches, and for the treatment of superficial wounds (Bader et al. 2003).

Pharmacological studies of *Achillea tenuifolia* presented its antimicrobial, anti-oxidant, spasmolytic, antiulcer, antitumor, choleric, antidiuretic, antidiabetic, and anti-inflammatory capabilities. Externally, the plant has been used to treat skin inflammation and skin irritation associated with various conditions in forms of a sitz bath and a compress (Nemeth and Bernath 2008). Additionally, the dried aerial parts of the plant are traditionally used to treat symptoms of the common cold (Al-Snafi 2013).

Local Food Uses in Other Regions

Achillea extracts are used to produce bitter liqueurs (Liu et al. 2020; Jan et al. 2021).

Achillea millefolium: The whole plant is used as filling for Khachapuri. The flowers are used as tea (Bussmann et al. 2017, 2020; Bussmann 2015).

Achillea filipendulina Lam.: Boiled flowers are added to flour soup and are given to women after delivery (Liu et al. 2020; Jan et al. 2021).

Local Handicraft and Other Uses in Other Regions

***Achillea millefolium* L.:** For digestive problems and wounds in animals (Babulka 1993). For cows when urine contains blood (Kujawska et al. 2017). Decoration for Corpus Christi (Łuczaj et al. 2012; Łuczaj 2012). Traditional forecasting: when yarrow blooms abundantly, winter will be good (Nedelcheva and Dogan 2011). With oak bark and *Rumex* sp. for diarrhea of animals as tea (Papp et al. 2012, 2014a, b, c). Tea in diarrhea in calves (Pieroni et al. 2014). For cough and as cicatrizant (Pieroni and Giusti 2009). Fodder for turkeys (Sõukand et al. 2017). Ornamental for Pentecost and St. John's Day (Stryamets et al. 2021). Flowers used as infusion for cattle and pigs to treat roundworm infection (Vlková et al. 2015).

Used as insect repellent. Serves as fodder for cattle, sheep, horses, and camels. Planted as ornamenta (Bussmann et al. 2020; Liu et al. 2020). An aerial part of the *Achillea millefolium* is used against parasites and in gastrointestinal diseases in calves. The mixture of the plant with hay contributes to its digestibility in livestock (Ges and Gorbach 1977).

***Achillea ptarmica* L.:** For cows which have just given birth (Kujawska et al. 2017). As seasoning in sops (Simkova and Polesny 2015).

The insecticidal and repellent activities of aerial parts of *Achillea tenuifolia* are attributed to the oil content of the plant. Domestic flies and honeybees displayed a significant response to the plant's insecticidal and repellent activities. However, there has not been much study on its insecticidal and repellent effects on other organisms. Additionally, there has not been further research on determining the active constituents responsible for the plant's insecticidal and repellent properties. Widely used in pest management. For this purpose, 800 g of the aerial parts including the flowers are infused in 10 liters of boiled water for 40 min. Before application, 40 g of soap is added to the infusion. The infusion is sprayed on vegetables and/or trees in the evening, before sunset. The aerial parts of the plant, including the flowers, are also put within the furrows of vegetables to deter pests (Liu et al. 2020; Jan et al. 2021).

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