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Review Article

Ruderal Plants of Akdeniz University Campus

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ABSTRACT

This study aimed to identify ruderal plants growing naturally on the Akdeniz University campus and to evaluate their potential therapeutic and ecological roles. A twelve-month field survey conducted in 2023 identified 161 ruderal taxa, including 18 subspecies and 6 varieties. Literature screening revealed that 74 species have been studied for anticancer properties, 64 for anti-inflammatory activities, and 97 for antioxidant capacity, while 49 species have not yet been examined for any of these biological effects. Ruderal plants exhibit remarkable tolerance to anthropogenic stress and heavy metal pollution, suggesting their potential in phytoremediation and biomonitoring. In addition, several taxa possess ethnobotanical and medicinal importance. The findings highlight the ecological adaptability and bioactive potential of ruderal vegetation under urban pressure. The study contributes to understanding how these resilient species may support sustainable urban ecosystems and provide valuable phytochemical resources for future pharmacological research.

Keywords: Ruderal plants, akdeniz university, antioxidant, anti-inflammatory anticancer.

1. INTRODUCTION

Urbanization and industrialization, which are converging and exhibit linear and positive development, are among today's most fundamental environmental problems. Due to the opportunities they have provided, urban centers have experienced intense migration from past to present. This migration has led to the expansion of settlement areas to meet vital needs such as increased regularity, housing, transportation, and education, and the preservation of natural areas near urbanized areas. This has led to the distribution of living conditions within the urban center, including natural areas and landscape arrangements, and the confinement of communities to green spaces. Considering these changes, the ruderal vegetation, considered a special type of vegetation, is no longer present. Ruderal vegetation is a special type of vegetation that appears as a type of synanthropic vegetation, which is the vegetation that has adapted to changing living conditions due to various anthropogenic effects, in fallow areas, roadsides or areas left empty in terms of construction within the city, outside the landscape plants greened by landscaping works of settlements (Akdeniz Şafak, 2015). In a sense, ruderal vegetation is the vegetation used as a general indicator for urban environmental conditions because it reflects the interaction between human impact and natural development. The functions of communities classified as ruderal are quite difficult to determine. As the definition suggests, while only superficially known, quantitative measurement is challenging due to the extensive nature of the communities. However, increasing anthropogenic impacts and the gradual expansion of urban areas have made ruderal vegetation a current issue. Ruderal communities are resistant to

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erosion because they colonize open soil quickly. They prevent eutrophication of watersheds, urban waterways, or stagnant water areas because they are almost entirely nitrophilous and absorb significant amounts of nitrate from water and soil. The species that make up ruderal vegetation communities are cosmopolitan and resistant to competition. They can also grow in a wide variety of ecological conditions, and their seeds can be transported for anthropogenic reasons, such as clinging to car tires, and they adapt quickly and easily to the environment they are transported to. They form ecotones because they form zones in areas where natural and urban areas meet. They produce numerous seeds. They also have a rapid vegetation period, or more precisely, they flower rapidly, allowing them to produce seeds quickly. A small amount of nutrients is sufficient for their seeds to germinate. Due to their invasive nature, they spread rapidly in bare land and can therefore be described as pioneer plants. Finally, their fast-growing root structure is noteworthy (Akdeniz Şafak, 2015). Ruderal plants play a significant role in urban and semi-urban areas. One study determined that plants collected from the walls and roofs of buildings within the city were ruderal (Yalçınalp and Meral, 2019). Ruderal plants have the potential to improve ecological parameters due to their unselective nutrient requirements and tolerance to stress conditions, and to tolerate pollution in landfills, industrial areas, or highway median strips, which are essential for urban functioning but considered ecologically problematic. A study has found that soils collected from roadside, urban, and rural areas show a decrease in heavy metal concentrations (Ullah et al. 2022). In this context, creating small living spaces that allow for surface adhesion in urban areas and roadside landscapes not only contributes positively to enhancing physical integrity and visual quality in urban design, but is also important for phytoremidization of pollutants and stabilization of soil metal accumulation. Creating niches for ruderal plants to facilitate adhesion on hard surfaces, creating pockets in roof and wall coverings, choosing porous rocks for roadside retaining walls, and creating wide, localized slits for drainage will all be beneficial in reducing environmental pollution. While it's clear that these plants are under significant stress from heavy metals, their ability to survive through adaptation to this stress condition makes ruderal vegetation unique. For example, *Poa annua* L., *Medicago polymorpha* L., and *Malva sylvestris* L. (Montiel-Rozas et al. 2015), which occur under various stress conditions in the Mediterranean region, are ruderal vegetation types and are examples of plants with phytoremediation capabilities. In a study indicating that the metal contents in ruderal vegetation were above the limits and phytotoxic levels for Cd, Pb and Zn (Zhu et al. 2018), it was determined that *Crassocephalum crepidioides* (Benth.) S. Moore, *Solanum americanum* Mill., *Bidens pilosa* Linn., *Conyza canadensis* (L.) Cronquist, *Ageratum conyzoides* Linn., *Ixeris denticulata* (Houtt.) Stebbins, *Echinochloa crusgali* (Linn.) Beauv. plants showed a strong ability in Cd accumulation and transport and it was stated that they are good candidates for Cd-phytoextraction. This study reported that the aerial part of *Crassocephalum crepidioides* (Benth) exhibited the basic characteristics of a Cd hyperaccumulator plant, particularly because its Cd concentration exceeded the threshold. The same study also reported that *Carex chinensis* Retz. and *Pteris vittata* L. were suitable for phytostabilization (Zhu et al. 2018). Therefore, when evaluating ruderal plants, they should also be examined and evaluated in terms of phytoremediation. Heavy metals are known to originate from many anthropogenic sources, such as industry, mining, and agriculture. Ruderal vegetation elements are abundant in these areas. A recycling model using ruderal plants can be developed for the removal of anthropogenic pollution. For example, individuals of *Nicotiana glauca* Graham, a member of the Solanaeceae family, growing in a solid waste-contaminated area of the Negev Desert had significantly higher Fe and Zn concentrations in the root and shoot sections than individuals from uncontaminated areas. No differences in Cu phytoremediation were reported, and no other signs of stress were observed in the contaminated soil other than inhibition of *Nicotiana glauca* Graham growth (Barazani et al. 2004). The results of a study indicated that basil plants exposed to a mixture of heavy metals have the potential to reduce metal mobility from soil to plants, observed a translocation process from roots to flowers and leaves for Cu, Ni and Zn, and although the calculated bioaccumulation factors are not insignificant, they should be restricted for human or animal consumption because Cd and Pb concentrations exceed legal limits in mature plants (Dinu, 2020). *Xanthium strumarium* L., from the Asteraceae family, has been identified as a potential tool for biomonitoring and environmental risk assessment (Ullah et al. 2022). Studies conducted with lichens, moss species, and perennial trees in terms of biological risk identification and environmental risk assessment date back to earlier times than those conducted with herbaceous plants (Manning, 1980; Garty et al. 1982; Yalçınalp et al. 1996). However, in recent years, studies on herbaceous species have also been encountered in the literature (Khan et al. 2021; Hosseini et al. 2023; Samir et al. 2023). As a result of the above-mentioned studies, it is possible to say that ruderal plants have a high potential to survive under stress conditions and to be phytoremidators and biomonitors. Numerous studies in the literature suggest the medicinal benefits of some plants typical of ruderal vegetation. For example, *Cichorium intybus* L. (chicory) is used in Anatolia as a wound healing ointment due to its antimicrobial activity (Sezik et al. 2001). It has been recorded that the leaves of *Convolvulus arvensis* L. are used in the external treatment of wounds because they prevent bleeding (Savran et al. 2009). Ruderal plants should be evaluated

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for heavy metal content before being used medicinally. For example, heavy metal concentrations in *Hertia intermedia* (Boiss.) Kuntze, *Cardaria chalepense* L., *Scorzonera ammophila* (Bunge) C.B. Clarke, *Tamarix karelini* Bunge, and *Astragalus auganus* Bunge species from Balochistan, Pakistan, have been found to meet international standards and are safe for medicinal use (Hussain et al. 2019). However, the potential for ruderal vegetation to accumulate heavy metals at concentrations higher than those specified by international safety standards for human consumption does not necessarily imply that they cannot be used medicinally. One study concluded that the overall heavy metal concentration in different parts of *Xanthium strumarium* L. collected from roads, urban areas, and rural areas can be reduced by washing, particularly in the passively uptake-inducing parts (Ullah et al. 2022). Ethnobotanical studies have revealed that some plants encountered in ruderal areas have traditional therapeutic uses. For example, the flowers of *Achillea arabica* Kotschy have been used for weight loss, to stop bleeding, and to treat hemorrhoids; the leaves of *Capsella bursa-pastoris* (L.) Medik. have been cooked; the leaf sprigs of *Cerinthe minor* L. subsp. auriculata (Ten.) Domac have been cooked and used as a gargle for gum and palate sores; the honey essence from the flowers of *Lamium amplexicaule* L. has been absorbed; the leaves, roots, and flowers of *Malva neglecta* Wallr. have been boiled together and used as a compress for abdominal distension; the aerial parts of *Polygonum cognatum* Meissn. have been consumed raw or cooked; and *Urtica diocia* L. has been used for arm and leg pain and rheumatic cancer (Kadıoğlu et al. 2021). Koyuncu and his colleagues have recorded that the leaves and branches of *Malva neglecta* Wallr. are used for prostate, the flowers are boiled and drunk for coughs, colds, and sore throats; the root of *Urtica dioica* L. is boiled, cooled, filtered, and drunk for urinary tract infections; 1 tablespoon of the seed mixed with honey is consumed for intestinal cancer, respiratory tract diseases, and lung diseases; the seeds are ground and added to soup for depression; and the leaves of *Plantago lanceolata* L. are used as an antiseptic and are also used among the public in the treatment of warts, rheumatism, and hemorrhoids (Koyuncu et al. 2009). Akdeniz University Campus (36°53'N, 30°40'E) is the habitat of 482 plant taxa belonging to 78 families and 326 genera. 69 of these 482 plant taxa are subspecies and 48 are variety status (Ünal et al. 2003). It is also an area with a maquis shrubland and a geological valley. The presence of small caves within the campus allows for the existence of microecological conditions within the campus. Furthermore, the fact that the flora study was conducted during the campus's most pristine period, that construction has increased around and within the campus in the 20 years since the flora study, and that scientific studies comparing the current status with the previous 20 years have transformed the study area into a natural research environment. In this respect, this study conducted on the campus contributes not only to Ünal's 2020 study but also to Ünal and Gökoğlu's 2022 study (Ünal & Gökoğlu 2022), which identified areas subject to anthropological pressure in the central districts of Antalya province, providing a new perspective by presenting ruderal plants observed on the campus and exploring their potential positive outcomes.

2. EXPERIMENTAL

2.1. Materials

In order to determine the ruderal plants spread in the Akdeniz University Campus area, a 12-month field study was carried out in 2023. The plant samples that could be identified during the field study were taken in situ, and the plant samples that could not be identified were determined in the laboratory using Davis's 'Flora of Turkey', Antalya city flora, Akdeniz University Campus Flora and various systematic sources (Davis, 1965-1982; Davis, Mill & Tan, 1988; Heywood & Tutin., 1964-1981; Sümbül & Göktürk, 1997; Ünal, 1996; Cambridge, U.K. Pignatti, 1982; Güner, Özhatay & Başer, 2000; Ekim et al. 2000; Ünal & Gokceoglu 2003; Ekim, 2005). Some plants were recorded by photographing them. As a result, the final table of ruderal plants on the Akdeniz University Campus (Table 1) was created.

2.2. Methods

The literature was searched and tabulated by filtering the terms "taxon name + anticancer/anti-inflammatory/antioxidant" in scientific publication sources such as Web of science, Google Schoolar, Ulakbim, Scopus, etc., for the period between 1950 and Semtember 2025, to determine whether the identified plants have anticancer, antioxidant, and anti-inflammatory properties.

3. RESULTS and DISCUSSION

In this study conducted on the Akdeniz University campus, 161 ruderal taxa (18 subspecies and 6 varieties) were identified. Studies on identified ruderal plants revealed that 74 plant species have undergone anticancer studies (Table 2), 64 have undergone anti-inflammatory studies (Table 3), and 97 have undergone antioxidant studies (Table 4). However, no anticancer, anti-inflammatory, or antioxidant studies were found for the 49 plant species included in the ruderal plant list.

Table 1. Akdeniz university campus ruderal plant list.

Plant Latin Nomenclature	Valid Names (IPNI/POWO)

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Acacia cyanophylla Lindley	*Acacia saligna* (Labill.) H.L.Wendl.
Stipa bromoides (L.) Dörfler	*Achnatherum bromoides* (L.) P.Beauv.
Aegilops biuncialis Vis.	*Aegilops biuncialis* Vis.
Aegilops umbellulata Zhukovsky subsp. *umbellulate*	*Aegilops umbellulata* Zhukovsky subsp. *umbellulate*
Ailanthus altissima (Mill.) Swingle	*Ailanthus altissima* (Mill.) Swingle
Allium sandrasicum Kollmann, N. Özhatay & Bothmer	*Allium sandrasicum* Kollmann, N. Özhatay & Bothmer
Amaranthus albus L.	*Amaranthus albus* L.
Amaranthus retroflexus L.	*Amaranthus retroflexus* L.
Anchusa undulata L. subsp. *hybrida* (Ten.) Coutinho	*Anchusa hybrida* Ten.
Andrachne telephioides L.	*Andrachne telephioides* L.
Anemone coronaria L.	*Anemone coronaria* L.
Anthemis chia L.	*Anthemis chia* L.
Arundo donax L.	*Arundo donax* L.
Asphodelus aestivus Brot.	*Asphodelus aestivus* Brot.
Asteriscus aquaticus (L.) Less.	*Asteriscus aquaticus* (L.) Less.
Astragalus hamosus L.	*Astragalus hamosus* L.
Avena wiestii Steudel.	*Avena wiestii* Steudel.
Bellis annua L.	*Bellis annua* L.
Bellis perennis L.	*Bellis perennis* L.
Bidens tripartita L.	*Bidens tripartita* L.
Biscutella didyma L.	*Biscutella didyma* L.
Blackstonia perfoliata (L.) Hudson subsp. *serotina* (W. Koch ex Reicb) Vollmann	*Blackstonia acuminata* subsp. *acuminata*
Bromus intermedius Guss	*Bromus intermedius* Guss
Bromus tectorum L.	*Bromus tectorum* L.
Buglossoides arvensis (L.) Johnston	*Buglossoides arvensis* (L.) Johnston
Calendula arvensis L.	*Calendula arvensis* L.
Calendula officinalis L.	*Calendula officinalis* L.
Capparis spinosa L.	*Capparis spinosa* L.
Capparis spinosa L. subsp. *inermis* Turro	*Capparis spinosa subsp. rupestris (Sm.) Nyman*
Capsella bursa-pastoris (L.) Medik	*Capsella bursa-pastoris* (L.) Medik
Carthamus dentatus Vahl.	*Carthamus dentatus* Vahl
Pennisetum orientale L.C.M. Richard	*Cenchrus orientalis (Rich.) Morrone*
Cnicus benedictus L. Var. kotschyi Boiss	*Centaurea benedicta* var. *kotschyi* (Sch.Bip.) Ghaz.
Centaurea solstitialis L. subsp. *solstitialis* L.	*Centaurea solstitialis* L. subsp. *solstitialis* L.
Centaurium pulchellum (Swartz) Druce	*Centaurium pulchellum* (Swartz) Druce
Chenopodium album L.	*Chenopodium album* L.
Chondrilla juncea L. var. *juncea* L.	*Chondrilla juncea* L. var. *juncea* L.
Cichorium intybus L.	*Cichorium intybus* L.
Cirsium creticum (Lam.) d' Urv. subsp. *creticum*	*Cirsium creticum* (Lam.) d' Urv. subsp. *creticum*
Convolvulus arvensis L.	*Convolvulus arvensis* L.
Crepis dioscoridis L.	*Crepis dioscoridis* L.
Crucianella latifolia L.	*Crucianella latifolia* L.
Cuscuta campestris Yuncker	*Cuscuta campestris* Yuncker
Cynodon dactylon (L.) Pers.	*Cynodon dactylon* (L.) Pers.
Datura stramonium L.	*Datura stramonium* L.
Daucus broteri Ten.	*Daucus broteri* Ten.
Daucus guttatus Sm.	*Daucus guttatus* Sm.
Inula graveolens (L.) Dest.	*Dittrichia graveolens* (L.) Greuter
Inula viscosa (L.) Aiton	*Dittrichia viscosa* (L.) Greuter
Urginea maritima (L.) Baker	*Drimia maritima* (L.) Stearn
Chenopodium ambrosioides L.	*Dysphania ambrosioides* (L.) Mosyakin & Clemants
Ecballium elaterium (L.) A.Rich.	*Ecballium elaterium* (L.) A.Rich.
Echinops ritro L.	*Echinops ritro* L.
Echinops viscosus DC. subsp. *bithynicus* (Boiss.) Rech.	*Echinops spinosissimus* subsp. *bithynicus* (Boiss.) Greuter
Echium angustifolium Miller	*Echium angustifolium* Miller
Echium italicum L.	*Echium italicum* L.
Conyza canadensis (L.) Cronquıst.	*Erigeron canadensis* L.
Erodium acaule (L.) Becherer & Thell.	*Erodium acaule* (L.) Becherer & Thell.
Erodium ciconium (L.) L' Hérit.	*Erodium ciconium* (L.) L' Hérit.
Euphorbia arvalis Boiss & Heldr.	*Euphorbia arvalis* Boiss & Heldr.
Euphorbia helioscopia L.	*Euphorbia helioscopia* L.
Euphorbia pubescens Vahl	*Euphorbia hirsuta* L.
Ficus carica L. subsp. *carica*	*Ficus carica* L. subsp. *carica*
Fumaria parviflora Lam.	*Fumaria parviflora* Lam.
Galium aparine L.	*Galium aparine* L.
Geranium lucidum L.	*Geranium lucidum* L.

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Geranium molle L. subsp. *molle*	*Geranium molle* L. subsp. *molle*
Glaucium flavum Crantz.	*Glaucium flavum* Crantz.
Glebionis coronaria (L.) Spach	*Glebionis coronaria* (L.) Spach
Heliotropium europaeum L.	*Heliotropium europaeum* L.
Heliotropium hirsutissimum Grauer	*Heliotropium hirsutissimum* Weber
Heliotropium supinum L.	*Heliotropium supinum* L.
Hirschfeldia incana (L.) Lagr.-Foss.	*Hirschfeldia incana* (L.) Lagr.-Foss.
Hypericum montbreti Spach. Hist.	*Hypericum montbreti* Spach. Hist.
Hyptis capitata Jacq.	*Hyptis capitata* Jacq.
Juncus fontanesii J. Gay. subsp. *pyramidatus* (Laharpe) Snay.	*Juncus fontanesii* J. Gay. subsp. *pyramidatus* (Laharpe) Snay.
Knautia integrifolia (L.) Bert. Var. bidens (Sm.) Barbos	*Knautia integrifolia* subsp. *urvillei* (Coult.) Greuter
Lactuca serriola L.	*Lactuca serriola* L.
Lagoecia cuminioides L.	*Lagoecia cuminoides* L.
Lagurus ovatus L.	*Lagurus ovatus* L.
Lamium amplexicaule L.	*Lamium amplexicaule* L.
Lamyropsis cynaroides (Lam.) Dittrich	*Lamyropsis cynaroides* (Lam.) Dittrich
Lantana camara L.	*Lantana camara* L.
Leucaena leucocephala (Lam.) de Wit	*Leucaena leucocephala* (Lam.) de Wit
Linum bienne Miller	*Linum bienne* Miller
Anagallis arvensis L. var. *arvensis*	*Lysimachia arvensis* (L.) U.Manns & Anderb.
Anagallis arvensis L. var. *caerulea (L.) Gouan*	*Lysimachia loeflingii* F.J.Jiménez & M.Talavera
Malva neglecta Wallr.	*Malva neglecta* Wallr.
Malva parviflora L.	*Malva parviflora* L.
Althaea hirsuta L.	*Malva setigera* K.F.Schimp. & Spenn.
Malva sylvestris L.	*Malva sylvestris* L.
Medicago orbicularis (L.) Bart.	*Medicago orbicularis* (L.) Bart.
Mentha pulegium L.	*Mentha pulegium* L.
Mercurialis annua L.	*Mercurialis annua* L.
Morus alba L.	*Morus alba* L.
Muscari armeniacum Leichtlin ex Baker	*Muscari armeniacum* H.J.Veitch
Muscari neglectum Guss.	*Muscari neglectum* Guss. ex Ten. & Sangiov.
Muscari weissii Freyn.	*Muscari weissii* Freyn.
Nerium oleander L.	*Nerium oleander* L.
Piptatherum miliaceum (L.) Casson subsp. *miliaceum*	*Oloptum miliaceum* (L.) Röser & Hamasha
Ononis natrix L. subsp. *natrix*	*Ononis natrix* L. subsp. *natrix*
Ononis natrix subsp. *hispanica* (L., fil.) Countinho	*Ononis natrix* subsp. *hispanica* (L., fil.) Countinho
Ononis pubescens L	*Ononis pubescens* L.
Opuntia ficus-indica (L.) Miller	*Opuntia ficus-indica* (L.) Mill.
Ornithogalum montanum Cyr.	*Ornithogalum montanum* Cirillo
Oxalis corniculata L.	*Oxalis corniculata* L.
Oxalis pes-caprae L.	*Oxalis pes-caprae* L.
Papaver rhoeas L.	*Papaver rhoeas* L.
Phleum subulatum (Savi) Aschers & Graebn subsp. *subulatum*	*Phleum subulatum* (Savi) Asch. & Graebn.
Phyla nodiflora (L.) Greene	*Phyla nodiflora* (L.) Greene
Picnomon acarna (L.) Cass.	*Picnomon acarna* (L.) Cass.
Plantago afra L.	*Plantago afra* L.
Plantago cretica L.	*Plantago cretica* L.
Plantago lanceolata L.	*Plantago lanceolata* L.
Poa trivialis L.	*Poa trivialis* L.
Portulaca oleracea L.	*Portulaca oleracea* L.
Scilla autumnalis L.	*Prospero autumnale* (L.) Speta
Pterocephalus plumosus (L.) Coulter	*Pterocephalus plumosus* (L.) Coulter
Ranunculus aquatilis L.	*Ranunculus aquatilis* L.
Ranunculus arvensis L.	*Ranunculus arvensis* L.
Raphanus raphanistrum L.	*Raphanus raphanistrum* L.
Reseda lutea L. var. *lutea*	*Reseda lutea L.* var. *lutea*
Ricinus communis L.	*Ricinus communis* L.
Robinia pseudoacacia L.	*Robinia pseudoacacia* L.
Romulea tempskyana Freyn.	*Romulea tempskyana* Freyn.
Rubus sanctus Schreber	*Rubus creticus* Tourn. ex L.
Rumex bucephalophorus L.	*Rumex bucephalophorus* L.
Rumex pulcher L.	*Rumex pulcher* L.
Minuartia mesogitana (Boiss.) Hand.-Mazz. subsp. *mesogitana*	*Sabulina mesogitana* (Boiss.) Dillenb. & Kadereit subsp. *mesogitana*
Minuartia mesogitana (Boiss.) Hand.-Mazz. subsp. *kotschyana* (Boiss.) Mc. Neill.	*Sabulina mesogitana* subsp. *kotschyana* (Boiss.) Dillenb. & Kadereit

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Salsola kali L.	*Salsola kali* L.
Sarcopoterium spinosum (L.) Spach.	*Sarcopoterium spinosum* (L.) Spach.
Scandix australis L. subsp. *grandiflora* (L.) Thell.	*Scandix australis* L. subsp. *grandiflora* (L.) Thell.
Scandix pecten- veneris L.	*Scandix pecten- veneris* L.
Scolymus hispanicus L.	*Scolymus hispanicus* L.
Senecio vernalis Waldst. & Kit.	*Senecio vernalis* Waldst. & Kit.
Senecio vulgaris L.	*Senecio vulgaris* L.
Silene vulgaris (Moench) Garcke Var. macrocarpa (Turrill) Coode & Cullen	*Silene vulgaris* subsp. *angustifolia* Hayek
Sinapis alba L.	*Sinapis alba* L.
Solanum nigrum L. subsp. *nigrum*	*Solanum nigrum* L. subsp. *nigrum*
Sonchus asper (L.) Hill. subsp. *glaucescens* (Jortan) Ball.	*Sonchus asper* (L.) Hill. subsp. *glaucescens* (Jortan) Ball.
Tamarix parviflora DC.	*Tamarix parviflora* DC.
Taraxacum buttleri Soest	*Taraxacum buttleri* Soest
Taraxacum hellenicum Dahlst	*Taraxacum hellenicum* Dahlst
Tordylium apulum L.	*Tordylium apulum* L.
Tragopogon longirostris Bisch ex Schultz var. *longirostris*	*Tragopogon coelesyriacus* Boiss.
Tribulus terrestris L.	*Tribulus terrestris* L.
Trifolium stellatum var. *stellatum* L.	*Trifolium stellatum* var. *stellatum* L.
Trifolium tomentosum L.	*Trifolium tomentosum* L.
Triticum aestivum L.	*Triticum aestivum* L.
Typha domingensis Pers.	*Typha domingensis* Pers.
Verbascum chazaliei Boiss.	*Verbascum chazaliei* Boiss.
Verbascum sinuatum subsp. *sinuatum* var. *adenosepalum* Murb.	*Verbascum sinuatum* var. *adenosepalum* Murb.
Verbena officinalis L.	*Verbena officinalis* L.
Veronica anagallis-aquatica L.	*Veronica anagallis-aquatica* L.
Veronica arvensis L.	*Veronica arvensis* L.
Veronica cymbalaria Bodard.	*Veronica cymbalaria* Bodard.
Veronica filiformis Sm.	*Veronica filiformis* Sm.
Vitex agnus-castus L.	*Vitex agnus-castus* L.
Xanthium spinosum L.	*Xanthium spinosum* L.
Xanthium strumarium L. var. *cavanillesi* (Schouw.)	*Xanthium strumarium* L. var. *cavanillesi* (Schouw.)

Table 2. Anticancer research on ruderal plants found in akdeniz university campus.

Plant Latin Nomenclature	**Valid Names (IPNI/POWO)**	**Anticancer Studies on Ruderal Plants in Campus Flora**
Ailanthus altissima (Mill.) Swingle	*Ailanthus altissima* (Mill.) Swingle	Wang et al, 2018
Amaranthus retroflexus L.	*Amaranthus retroflexus* L.	Babaei et al., 2022
Anchusa undulata L. subsp. *hybrida* (Ten.) Coutinho	*Anchusa hybrida Ten.*	Jaradat et al. 2020
Andrachne telephioides L.	*Andrachne telephioides* L.	El Manawaty,et al. 2013
Arundo donax L.	*Arundo donax* L.	Al-sayed,et al. 2024
Asteriscus aquaticus (L.) Less.	*Asteriscus aquaticus* (L.) Less.	Negrín et al. 2010
Astragalus hamosus L.	*Astragalus hamosus* L.	Alakiali et al. 2023
Bellis perennis L.	*Bellis perennis* L.	Karakas et al. 2015
Calendula arvensis L.	*Calendula arvensis* L.	Abutaha et al. 2019
Calendula officinalis L.	*Calendula officinalis* L.	Tavallali et al. 2024
Capparis spinosa L.	*Capparis spinosa* L.	Moghadamnia et al. 2019
Centaurea solstitialis L. subsp. *solstitialis* L.	*Centaurea solstitialis* L. subsp. *solstitialis* L.	Abdul Samad, 2024
Cuscuta campestris Yuncker	*Cuscuta campestris* Yuncker	Selvi & Ünal, 2024
Cynodon dactylon (L.) Pers.	*Cynodon dactylon* (L.) Pers.	Salahuddin et al. 2016
Datura stramonium L.	*Datura stramonium* L.	Nasir, 2020
Inula graveolens (L.) Dest.	*Dittrichia graveolens* (L.) Greuter	Yumrutas et al. 2023
Inula viscosa (L.) Aiton	*Dittrichia viscosa* (L.) Greuter	Colak et al. 2022
Urginea maritima (L.) Baker	*Drimia maritima* (L.) Stearn	El-Bondkly et al. 2022
Chenopodium ambrosioides L.	*Dysphania ambrosioides* (L.) Mosyakin & Clemants	Ya-Nan et al. 2015
Ecballium elaterium (L.) A.Rich.	*Ecballium elaterium* (L.) A.Rich.	Beksravi et al. 2024
Echinops viscosus DC. subsp. *bithynicus* (Boiss.) Rech.	*Echinops spinosissimus* subsp. *bithynicus* (Boiss.) Greuter	Bitew & Hymet, 2019
Echium angustifolium Miller	*Echium angustifolium* Miller	El-Tantawy et al. 2021
Echium italicum L.	*Echium italicum* L.	Tepe, 2024
Conyza canadensis (L.) Cronquıst.	*Erigeron canadensis* L.	Ayaz et al. 2016
Euphorbia helioscopia L.	*Euphorbia helioscopia* L.	El Manawaty et al. 2013
Ficus carica L. subsp. *carica*	*Ficus carica* L. subsp. *carica*	Yalçınkaya et al. 2023
Fumaria parviflora Lam.	*Fumaria parviflora* Lam.	Celik et al. 2022; Abdolmaleki et al. 2024

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Galium aparine L.	*Galium aparine* L.	Atmaca et al. 2016
Geranium molle L. subsp. *molle*	*Geranium molle* L. subsp. *molle*	Goryacha et al. 2021
Glaucium flavum Crantz.	*Glaucium flavum* Crantz.	Bournine et al. 2013; Kalantari & Entezari 2020
Glebionis coronaria (L.) Spach	*Glebionis coronaria* (L.) Spach	Wijaya et al. 2020
Heliotropium europaeum L.	*Heliotropium europaeum* L.	Achakzai et al. 2020
Hypericum montbreti Spach. Hist.	*Hypericum montbreti* Spach. Hist.	Güzey et al. 2011
Hyptis capitata Jacq.	*Hyptis capitata* Jacq.	To'bungan et al. 2022
Lactuca serriola L.	*Lactuca serriola* L.	Elsharkawy & Alshathly, 2013
Lantana camara L.	*Lantana camara* L.	Ghosh et al. 2010
Leucaena leucocephala (Lam.) de Wit	*Leucaena leucocephala* (Lam.) de Wit	She et al. 2017
Anagallis arvensis L. var. *arvensis*	*Lysimachia arvensis* (L.) U.Manns & Anderb.	Agrawal et al. 2021 Hassan et al. 2022
Anagallis arvensis L. var. *caerulea* (L.) Gouan	*Lysimachia loeflingii* F.J.Jiménez & M.Talavera	Arslan et al. 2023
Malva neglecta Wallr.	*Malva neglecta* Wallr.	Arslan et al. 2023
Malva sylvestris L.	*Malva sylvestris* L.	Mousavi et al. 2021
Medicago orbicularis (L.) Bart.	*Medicago orbicularis* (L.) Bart.	Shaito et al. 2024
Mercurialis annua L.	*Mercurialis annua* L.	Al-Douri et al. 2022
Morus alba L.	*Morus alba* L.	Fallah et al. 2018; Chan et al. 2020; Kumkoon et al. 2023
Nerium oleander L.	*Nerium oleander* L.	Rashan et al. 2011; Barai et al. 2018; Rashan et al. 2023; Upadhyay vd, 2024
Ononis natrix L. subsp. *natrix*	*Ononis natrix* L. subsp. *natrix*	Stojković et al. 2020
Ononis natrix subsp. *hispanica* (L., fil.) Countinho	*Ononis natrix* subsp. *hispanica* (L., fil.) Countinho	Yerlikaya et al. 2017
Opuntia ficus-indica (L.) Miller	*Opuntia ficus-indica* (L.) Mill.	Abou-Elella et al. 2014; Wang et al. 2023
Oxalis corniculata L.	*Oxalis corniculata* L.	Salahuddin et al. 2016; Gholipour et al. 2022
Phyla nodiflora (L.) Greene	*Phyla nodiflora* (L.) Greene	Paua et al. 2022
Plantago afra L.	*Plantago afra* L.	Galvez et al. 2003; Noureddine et al. 2024
Plantago lanceolata L.	*Plantago lanceolata* L.	Noureddine et al. 2024
Portulaca oleracea L.	*Portulaca oleracea* L.	de Souza et al. 2022
Scilla autumnalis L.	*Prospero autumnale* (L.) Speta	Pekmez et al. 2021
Ranunculus arvensis L.	*Ranunculus arvensis* L.	Byambaa et al. 2022
Raphanus raphanistrum L.	*Raphanus raphanistrum* L.	Pocasap et al. 2013; Tiraş et al. 2024
Reseda lutea L. var. *lutea*	*Reseda lutea* L. var. *lutea*	Al-Snafi et al. 2022
Ricinus communis L.	*Ricinus communis* L.	Shah et al. 2015; Shobha et al. 2019; Javanshir et al. 2020; Shafiq vd, 2021; Mabasa, 2017
Robinia pseudoacacia L.	*Robinia pseudoacacia* L.	Bhat et al. 2015; Cvetković et al.2019
Rubus sanctus Schreber	*Rubus creticus* Tourn. ex L.	Jaradat et al. 2021
Rumex pulcher L.	*Rumex pulcher* L.	Noor et al. 2023
Sarcopoterium spinosum (L.) Spach.	*Sarcopoterium spinosum* (L.) Spach.	Loizzo et al. 2013
Scandix pecten- veneris L.	*Scandix pecten- veneris* L.	Sharifi-Rad et al. 2016
Scolymus hispanicus L.	*Scolymus hispanicus* L.	Ozel-Tasci et al. 2022
Senecio vulgaris L.	*Senecio vulgaris* L.	Mahdavi et al. 2019
Sinapis alba L.	*Sinapis alba* L.	Boscaro et al. 2018
Solanum nigrum L. subsp. *nigrum*	*Solanum nigrum* L. subsp. *nigrum*	Lai et al. 2016
Tribulus terrestris L.	*Tribulus terrestris* L.	Abbas et al. 2022
Triticum aestivum L.	*Triticum aestivum* L.	Hussain et al. 2014
Typha domingensis Pers.	*Typha domingensis* Pers.	Karbon et al. 2020
Verbena officinalis L.	*Verbena officinalis* L.	Encalada et al. 2015
Vitex agnus-castus L.	*Vitex agnus-castus* L.	Sultan Aslantürk & Aşkın Çelik, 2013
Xanthium spinosum L.	*Xanthium spinosum* L.	Ly et al. 2021; Al Kury et al. 2022
Xanthium strumarium L. subsp. *cavanillesi* (Schouw.)	*Xanthium orientale* L.	Vaishnav et al. 2015

Table 3. Anti-inflammatory research on ruderal plants available at akdeniz university campus.

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Plant Latin Nomenclature	**Valid Names (IPNI/POWO)**	**Anti-inflammatory Studies on Ruderal Plants in Campus Flora**
Acacia cyanophylla Lindley	*Acacia saligna* (Labill.) H.L. Wendl.	Iqbal, 2022
Ailanthus altissima (Mill.) Swingle	*Ailanthus altissima* (Mill.) Swingle	Meihuaet al. 2009
Amaranthus retroflexus L.	*Amaranthus retroflexus* L.	Tyszka-Czochara, 2016
Anemone coronaria L.	*Anemone coronaria* L.	Hao et al. 2017
Arundo donax L.	*Arundo donax* L.	Rajput ve Chaubey, 2023
Astragalus hamosus L.	*Astragalus hamosus* L.	Shojaii et al. 2015
Bellis perennis L.	*Bellis perennis* L.	Karakas et al. 2017
Calendula arvensis L.	*Calendula arvensis* L.	Khouchlaa et al. 2023; Abudunia et al. 2017
Calendula officinalis L.	*Calendula officinalis* L.	Pasa, 2022
Capparis spinosa L.	*Capparis spinosa* L.	Rahnavard et al. 2017
Cnicus benedictus L. var. *kotschyi* Boiss	*Centaurea benedicta* var. *kotschyi* (Sch.Bip.) Ghaz.	Paniagua-Zambrana et al. 2024
Centaurea solstitialis L. subsp. *solstitialis* L.	*Centaurea solstitialis* L. subsp. *solstitialis* L.	Şen, 2023
Cichorium intybus L.	*Cichorium intybus* L.	Rizvi et al. 2014
Convolvulus arvensis L.	*Convolvulus arvensis* L.	Osman et al. 2024
Cuscuta campestris Yuncker	*Cuscuta campestris* Yuncker	Lee et al. 2011
Cynodon dactylon (L.) Pers.	*Cynodon dactylon* (L.) Pers.	Garg & Paliwal, 2011
Datura stramonium L.	*Datura stramonium* L.	Aboluwodi et al. 2017
Inula graveolens (L.) Dest.	*Dittrichia graveolens* (L.) Greuter	Abou-Douh, 2008
Inula viscosa (L.) Aiton	*Dittrichia viscosa* (L.) Greuter	Rhimi et al. 2018
Chenopodium ambrosioides L.	*Dysphania ambrosioides* (L.) Mosyakin & Clemants	TrivellatoGrassi et al. 2013
Ecballium elaterium (L.) A.Rich.	*Ecballium elaterium* (L.) A.Rich.	Yesilada et al. 1988; Fethi et al. 2017
Conyza canadensis (L.) Cronquıst.	*Erigeron canadensis* L.	Sohn et al. 2009
Erodium ciconium (L.) L' Hérit.	*Erodium ciconium* (L.) L' Hérit.	Ljoljić Bilić et al. 2019
Euphorbia helioscopia L.	*Euphorbia helioscopia* L.	Saleem et al. 2015; Su et al. 2019
Ficus carica L. subsp. *carica*	*Ficus carica* L. subsp. *carica*	Patil et al. 2011; Ali et al. 2012; Park et al. 2013
Fumaria parviflora Lam.	*Fumaria parviflora* Lam.	Rizvi et al. 2017
Galium aparine L.	*Galium aparine* L.	Shim & Shim, 2018
Glaucium flavum Crantz.	*Glaucium flavum* Crantz.	Boulaaba et al. 2019
Glebionis coronaria (L.) Spach	*Glebionis coronaria* (L.) Spach	Wijaya et al. 2020
Heliotropium europaeum L.	*Heliotropium europaeum* L.	Ozay, 2023
Lactuca serriola L.	*Lactuca serriola* L.	Ahmad et al. 1992
Lantana camara L.	*Lantana camara* L.	Ashal et al. 2020
Leucaena leucocephala (Lam.) de Wit	*Leucaena leucocephala* (Lam.) de Wit	Al-Baaj et al. 2023
Anagallis arvensis L. var. *arvensis*	*Lysimachia arvensis* (L.) U.Manns & Anderb.	Jakimiuk et al. 2023
Mercurialis annua L.	*Mercurialis annua* L.	Assaf et al. 2013 Bustanji et al. 2012
Malva parviflora L.	*Malva parviflora* L.	Bouriche et al. 2011; Martínez-Hernández et al. 2020; Altyar et al. 2022
Malva sylvestris L.	*Malva sylvestris* L.	Martins et al. 2017; Seddighfar et al. 2020; Mousavi et al. 2021
Morus alba L.	*Morus alba* L.	Chung et al. 2003; Zelová et al. 2014; Qin et al. 2015; Yu et al. 2021
Nerium oleander L.	*Nerium oleander* L.	Kumar & Anand, 2010
Ononis natrix L. subsp. *natrix*	*Ononis natrix* L. subsp. *natrix*	Öz et al. 2017; Ertaş et al. 2025
Oxalis corniculata L.	*Oxalis corniculata* L.	Dighe et al. 2016
Papaver rhoeas L.	*Papaver rhoeas* L.	Kim et al. 2021
Portulaca oleracea L.	*Portulaca oleracea* L.	Rahimi et al. 2019; Ghorani et al. 2023
Raphanus raphanistrum L.	*Raphanus raphanistrum* L.	Mohammed & Hameed, 2018
Reseda lutea L. var. *lutea*	*Reseda lutea L.* var. *lutea*	Kang et al. 2013
Ricinus communis L.	*Ricinus communis* L.	Nemudzivhadi & Masoko, 2014
Robinia pseudoacacia L.	*Robinia pseudoacacia* L.	Nho et al. 2018; Kang et al. 2022

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Rubus sanctus Schreber	*Rubus creticus* Tourn. ex L.	Erdemoglu et al. 2003
Rumex pulcher L.	*Rumex pulcher* L.	Noor et al. 2023
Salsola kali L.	*Salsola kali* L.	Alturkistani et al. 2017; El-Bassossy et al. 2023
Sarcopoterium spinosum (L.) Spach.	*Sarcopoterium spinosum* (L.) Spach.	Rozenberg et al. 2020
Scandix pecten- veneris L.	*Scandix pecten- veneris* L.	Stalinska et al. 2005
Scolymus hispanicus L.	*Scolymus hispanicus* L.	Kandil et al. 2020
Solanum nigrum L. subsp. *nigrum*	*Solanum nigrum* L. subsp. *nigrum*	Ravi et al. 2009; Cai et al. 2010; Yeom et al. 2019
Tribulus terrestris L.	*Tribulus terrestris* L.	Abbas et al. 2022; Lee et al. 2017
Triticum aestivum L.	*Triticum aestivum* L.	Han et al. 2020; Park et al. 2023
Typha domingensis Pers.	*Typha domingensis* Pers.	Dilshad et al. 2023
Verbena officinalis L.	*Verbena officinalis* L.	Calvoet al. 2006
Veronica anagallis-aquatica L.	*Veronica anagallis-aquatica* L.	Küpeli et al. 2005
Veronica cymbalaria Bodard.	*Veronica cymbalaria* Bodard.	Harput et al. 2002
Vitex agnus-castus L.	*Vitex agnus-castus* L.	Choudhary et al. 2009
Xanthium spinosum L.	*Xanthium spinosum* L.	Kim et al. 2005

Table 4. Antioxidant research of ruderal plants with valid names (ıpnı/powo) in akdeniz university campus.

Plant Latin Nomenclature	**Valid Names (IPNI/POWO)**	**Antioxidant Studies on Ruderal Plants in Campus Flora**
Acacia cyanophylla Lindley	*Acacia saligna* (Labill.) H.L.Wendl.	Elansary et al. 2020
Ailanthus altissima (Mill.) Swingle	*Ailanthus altissima* (Mill.) Swingle	Mo et al. 2021; Andonova et al. 2023
Amaranthus retroflexus L.	*Amaranthus retroflexus* L.	Pacificoet al. 2008;
Anchusa undulata L. subsp. *hybrida* (Ten.) Coutinho	*Anchusa hybrida* Ten.	Sarikurkcu et al. 2015
Anemone coronaria L.	*Anemone coronaria* L.	Al-Khayyat et al. 2024
Anthemis chia L.	*Anthemis chia* L.	Gulten, 2013
Arundo donax L.	*Arundo donax* L.	Licursi et al. 2018
Asphodelus aestivus Brot.	*Asphodelus aestivus* Brot.	Peksel et al. 2013
Astragalus hamosus L.	*Astragalus hamosus* L.	Shojaii et al. 2015
Bellis perennis L.	*Bellis perennis* L.	Karakas et al. 2022; Marqueset al. 2012
Calendula arvensis L.	*Calendula arvensis* L.	Ercetin et al. 2017; Abudunia et al. 2017
Calendula officinalis L.	*Calendula officinalis* L.	Preethi et al. 2006; Ercetin et al. 2017;
Capparis spinosa L.	*Capparis spinosa* L.	Mansour et al. 2016
Cnicus benedictus L. var. *kotschyi* Boiss	*Centaurea benedicta* var. *kotschyi* (Sch.Bip.) Ghaz.	Tiwana et al. 2021
Centaurea solstitialis L. subsp. *solstitialis* L.	*Centaurea solstitialis* L. subsp. *solstitialis* L.	Şen, 2023
Chenopodium album L.	*Chenopodium album* L.	Pandey et al. 2014; Lone et al. 2017
Cirsium creticum (Lam.) d' Urv. subsp. *creticum*	*Cirsium creticum* (Lam.) d' Urv. subsp. *creticum*	Sabudak et al. 2019
Convolvulus arvensis L.	*Convolvulus arvensis* L.	Mohd Azman et al. 2015
Cuscuta campestris Yuncker	*Cuscuta campestris* Yuncker	Jafari et al. 2015; Ramezan et al. 2023
Datura stramonium L.	*Datura stramonium* L.	Iqbal et al. 2017
Inula graveolens (L.) Dest.	*Dittrichia graveolens* (L.) Greuter	Kormaz et al. 2023
Inula viscosa (L.) Aiton	*Dittrichia viscosa* (L.) Greuter	Sevgi et al. 2021
Urginea maritima (L.) Baker	*Drimia maritima* (L.) Stearn	Bensaci et al. 2024
Chenopodium ambrosioides L.	*Dysphania ambrosioides* (L.) Mosyakin & Clemants	Ajaib et al. 2016; Bezerra et al. 2019
Ecballium elaterium (L.) A.Rich.	*Ecballium elaterium* (L.) A.Rich.	Bourebaba et al. 2020
Echinops ritro L.	*Echinops ritro* L.	Zheleva-Dimitrova et al. 2023
Echinops viscosus DC. subsp. *bithynicus* (Boiss.) Rech.	*Echinops spinosissimus* subsp. *bithynicus* (Boiss.) Greuter	Toroğlu et al. 2012
Echium angustifolium Miller	*Echium angustifolium* Miller	El-Tantawy et al. 2021
Echium italicum L.	*Echium italicum* L.	Uysal et al. 2021
Conyza canadensis (L.) Cronquıst.	*Erigeron canadensis* L.	Choi et al. 2020
Erodium ciconium (L.) L' Hérit.	*Erodium ciconium* (L.) L' Hérit.	Bilić et al. 2020
Euphorbia helioscopia L.	*Euphorbia helioscopia* L.	Maoulainine et al. 2012
Ficus carica L. subsp. *carica*	*Ficus carica* L. subsp. *carica*	Ali et al. 2012;

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		Shahinuzzaman et al. 2020
Fumaria parviflora Lam.	*Fumaria parviflora* Lam.	Rizvi et al. 2017; CELIK et al. 2022
Galium aparine L.	*Galium aparine* L.	Korkmaz et al. 2021
Geranium molle L. subsp. *molle*	*Geranium molle* L. subsp. *molle*	Świątek et al. 2021; Elansary et al. 2018
Glaucium flavum Crantz.	*Glaucium flavum* Crantz.	Boulaaba et al. 2019
Glebionis coronaria (L.) Spach	*Glebionis coronaria* (L.) Spach	Mahdi et al. 2023
Heliotropium europaeum L.	*Heliotropium europaeum* L.	Ozay, 2023
Heliotropium hirsutissimum Grauer	*Heliotropium hirsutissimum* Weber	Uzunhan & Çelik, 2018
Hypericum montbreti Spach. Hist.	*Hypericum montbreti* Spach. Hist.	Güzey et al. 2011
Hyptis capitata Jacq.	*Hyptis capitata* Jacq.	Nantitanon et al. 2007
Lactuca serriola L.	*Lactuca serriola* L.	El-Esawi et al. 2017
Lamium amplexicaule L.	*Lamium amplexicaule* L.	Yumrutas & Saygideger, 2010
Lantana camara L.	*Lantana camara* L.	Kumar et al. 2014; Sousa et al. 2015
Leucaena leucocephala (Lam.) de Wit	*Leucaena leucocephala* (Lam.) de Wit	Mohammed et al. 2015; Aderogba et al. 2010
Anagallis arvensis L. var. *arvensis*	*Lysimachia arvensis* (L.) U.Manns & Anderb.	Gameti et al. 2023
Anagallis arvensis L. var. *caerulea* (L.) Gouan	*Lysimachia loeflingii* F.J.Jiménez & M.Talavera	Gameti et al. 2023
Malva neglecta Wallr.	*Malva neglecta* Wallr.	Türker & Dalar, 2013
Malva parviflora L.	*Malva parviflora* L.	Farhan et al. 2012
Malva sylvestris L.	*Malva sylvestris* L.	Tabaraki et al. 2012
Medicago orbicularis (L.) Bart.	*Medicago orbicularis* (L.) Bart.	Shaito et al. 2024
Mentha pulegium L.	*Mentha pulegium* L.	Sarikurkcu et al. 2012
Mercurialis annua L.	*Mercurialis annua* L.	Bustanji et al. 2012; Al-Douri et al. 2022
Morus alba L.	*Morus alba* L.	Khan et al. 2013
Muscari armeniacum Leichtlin ex Baker	*Muscari armeniacum* H.J.Veitch	Bokov, 2019
Muscari neglectum Guss.	*Muscari neglectum* Guss. ex Ten. & Sangiov.	Mahboubi & Taghizadeh, 2016
Nerium oleander L.	*Nerium oleander* L.	Tahir et al. 2015; Namian et al. 2013
Ononis natrix L. subsp. *natrix*	*Ononis natrix* L. subsp. *natrix*	Al-Qudah et al. 2014
Ononis natrix subsp. *hispanica* (L., fil.) Countinho	*Ononis natrix* subsp. *hispanica* (L., fil.) Countinho	Yerlikaya et al. 2017
Ononis pubescens L	*Ononis pubescens* L	Jaradat et al. 2017
Opuntia ficus-indica (L.) Miller	*Opuntia ficus-indica* (L.) Mill.	Abou-Elella et al. 2014;
Oxalis corniculata L.	*Oxalis corniculata* L.	Duc et al. 2023
Oxalis pes-caprae L.	*Oxalis pes-caprae* L.	Kabach et al. 2023
Papaver rhoeas L.	*Papaver rhoeas* L.	Kostic et al. 2010
Phyla nodiflora (L.) Greene	*Phyla nodiflora* (L.) Greene	Chua et al. 2019
Plantago lanceolata L.	*Plantago lanceolata* L.	Lukova et al. 2017; Bahadori et al. 2020
Portulaca oleracea L.	*Portulaca oleracea* L.	Erkan, 2012; Fernández-Poyatos, et al. 2021
Scilla autumnalis L.	*Prospero autumnale* (L.) Speta	Mammadov et al. 2017
Ranunculus arvensis L.	*Ranunculus arvensis* L.	Bhatti et al. 2015; Kaya et al. 2010
Raphanus raphanistrum L.	*Raphanus raphanistrum* L.	Akhlaq et al. 2024; Turan & Aydın 2012
Reseda lutea L. var. *lutea*	*Reseda lutea* L. var. *lutea*	Kizilta, 2022
Ricinus communis L.	*Ricinus communis* L.	Shazia et al. 2016
Robinia pseudoacacia L.	*Robinia pseudoacacia* L.	Marinas et al. 2014
Rubus sanctus Schreber	*Rubus creticus* Tourn. ex L.	Kozłowska et al. 2022
Rumex bucephalophorus L.	*Rumex bucephalophorus* L.	Seeram et al. 2005
Rumex pulcher L.	*Rumex pulcher* L.	Noor et al. 2023
Salsola kali L.	*Salsola kali* L.	El-Bassossy et al. 2023
Sarcopoterium spinosum (L.) Spach.	*Sarcopoterium spinosum* (L.) Spach.	Piras et al. 2017
Scandix pecten- veneris L.	*Scandix pecten- veneris* L.	Sharifi-Rad et al. 2016
Scolymus hispanicus L.	*Scolymus hispanicus* L.	Aboukhalaf et al. 2023
Senecio vernalis Waldst. & Kit.	*Senecio vernalis* Waldst. & Kit.	Doğan & Doğan, 2021
Senecio vulgaris L.	*Senecio vulgaris* L.	Salinitro et al. 2020
Silene vulgaris (Moench) Garcke var. *macrocarpa* (Turrill) Coode & Cullen	*Silene vulgaris* subsp. *angustifolia* Hayek	Mohti et al. 2020
Sinapis alba L.	*Sinapis alba* L.	Sadowska et al. 2023
Sonchus asper (L.) Hill. subsp. *glaucescens* (Jortan) Ball.	*Sonchus asper* (L.) Hill. subsp. *glaucescens* (Jortan) Ball.	Sarıkürkçü et al. 2014

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Tamarix parviflora DC.	*Tamarix parviflora* DC.	Sultanova et al. 2001; Ksouri et al. 2009
Tragopogon longirostris Bisch ex Schultz var. *longirostris*	*Tragopogon coelesyriacus* Boiss.	Martínez-Gonzálezet al. 2017
Tribulus terrestris L.	*Tribulus terrestris* L.	Hammoda et al. 2013
Trifolium stellatum var. *stellatum* L.	*Trifolium stellatum* var. *stellatum* L.	Sabudak et al. 2009
Triticum aestivum L.	*Triticum aestivum* L.	Kulkarni et al. 2006
Typha domingensis Pers.	*Typha domingensis* Pers.	Chai et al. 2014
Verbena officinalis L.	*Verbena officinalis* L.	Casanova et al. 2008; Rehecho et al. 2011
Veronica arvensis L.	*Veronica arvensis* L.	Sharifi-Radet al. 2018
Veronica cymbalaria Bodard.	*Veronica cymbalaria* Bodard.	Saracoglu et al. 2011
Vitex agnus-castus L.	*Vitex agnus-castus* L.	Sağlam et al. 2007; Maltaş et al. 2010
Xanthium spinosum L.	*Xanthium spinosum* L.	Barkatullah et al. 2024

4.CONCLUSION

Scenarios regarding the consequences of the recent global climate change are becoming increasingly serious. Considering that millions of people will be forced to migrate, agricultural preferences will change, and currently arable land will be directly or indirectly affected by climate change, the importance of plants that survive in extreme conditions is increasing. Furthermore, some scientific circles have described our current era as the Anthropocene. The primary negative environmental impacts of the Anthropocene are increased construction and increasing environmental pollution. From this perspective, the negative impact of pollutants on abiotic factors essential for plants will restrict the availability of many medicinal plants. While stressful conditions are known to increase secondary metabolite diversity and levels for some medicinal taxa, multiple stress factors experienced specifically for important parameters of a taxon may not only prevent plant development and reproduction, or prevent dormancy in naturally occurring seeds, but may also result in premature breakage and interruption of development. For these and many other reasons, plant geographic ranges may change or disappear in the coming period, and population numbers may decrease. This will change the IUCN categories of many species in nature and necessitate their protection. However, the evolutionary acquisition of hyperadaptive capabilities by plants considered ruderal, or becoming ruderal, has eliminated the impact of these scenarios. This hyperadaptiveness has opened new opportunities, both directly and indirectly, for humans, their diets, and other living creatures, including treatments, nutrition, and pollution reduction. This study sought to identify ruderal plants found on the Akdeniz University campus, and by referencing literature on the therapeutic properties of these ruderal plants, a puzzle piece was uncovered. The study identified 161 taxa growing wild on the campus as ruderal plants. Furthermore, 74 plant species were investigated for anticancer properties, 64 for anti-inflammatory properties, and 97 for antioxidant properties. However, no anticancer, anti-inflammatory, or antioxidant studies were found for the 49 plant species listed as ruderal plants.

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Conflict of Interest

Authors should specify that there is no conflict of interest with any person, institution, company, etc.

Ethical Statement

This research did not involve human participants or animals. Therefore, no ethical approval was required.

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