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Research article

Use of medicinal plants in landscape architecture design

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Abstract: This study is located in Turkey Nigde province in Central Anatolia and in the surrounding villages to identify plants used for medicinal purposes, it is to reveal the local names. It is to increase the use of these plants in landscape design by focusing on visually effective species. The study was carried out between 2018-2019. In this period, 62 plant species were determined. These plants are used by local people according to the variety of plants, leaves, flowers and fruits. The identified plants are classified according to their use in landscaping as border plant and as ground cover. People living in the city center give more importance to visually effective and imported plants, while those who live villages focus on the use of plants, natural plants, which are used for medical purposes. The aim is to increase the use of medicinal plants, regardless of location, to ensure the sustainability of native plants.

Keywords: Central Anatolia, Niğde, Medicinal plants, Natural plants

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Introduction

Turkey is located in the temperate zone, with its plant diversity and noteworthy properties, differs from many nearby countries. The number of plant species in Turkey is close to the number of plant species in Europe. (Avcı, 2005). More than 12,000 plant taxa grow naturally in Turkey. Approximately 3,649 (3/1 ratio) of them are endemic taxa (Güner et al., 2012, Şenkul and Kaya, 2017). Turkey, with around 12,000 plant taxa and endemism within about 1/3 of it with varying ecological conditions is one of the important countries in the world. (Güner ve ark, 2012,). In Turkey, there are about 1,000 species of medicinal and aromatic plants. While 350 of these species are traded in the domestic market, approximately 100 of the plants are exported. (Anonymous, 2017).

Medicinal and aromatic plants, which are valuable in both health and economic terms, are of great importance in human life. From the past to the present day people have benefited from different plant species in order for healing and obtaining nutrients. Considering the historical development, the studies on the plants started in the 19th century and morphine from the *Papaver somniferum* L. and atropine from *Atropa belladonna* L. was isolated and started to be used for medical purposes. According to the World Health Organization (WHO) reports in the 21st century, approximately 80% of the world's population preferred traditional medicine based on herbal products for the purpose of treatment. Approximately 25% of the drugs used in developed countries are of plant origin. This confirms the fact that, while 2000 medical plants were registered in 1979, number of plants used for medical purposes reached 20000 today. The main reason for this is cheap, easy supply and the lack of side effects of medicinal plants (Baytop 1999; Zengin, 2015).

This information obtained through trial and error has reached to the present day with some changes and developments in usage patterns throughout the ages (Kendir and Güvenç, 2010). Since ancient times people have divided the herbs into two groups: useful and useless. The first group includes all the herbs which are fragrant (aromatic) and which people benefit in any way; the second group includes all other herbaceous plants we see in nature (İnaltong, 2008; Cömert ve Dinç, 2014).

In our country, Central Anatolia is one of the regions where herbaceous plants are intensive. Niğde and its

villages are located in the area dominated by Bolkar and Taurus mountains. For this reason, it is home to many different plant species and varieties.

Plants used in this region have been noticed by researchers and have been the subject of many studies. For example, an ethnobotanical study in Niğde city by Balı and Uçar (2009), Savran et al. (2015), Savran et al. (2016), Kendir and Güneş (2010), Bağcı et al. (2006), when the studies are examined, it is seen that the density and usage areas of natural plant species vary. In the areas where research is carried out, some of the plants used in the past traditions is continue to be made and used as drugs. In the ongoing vineyard culture and in the gardens of old houses, some of the medicinal plants are preferred as ornamental plants. Objectives of the study are: To determine the medicinal plants with the potential of ornamental plants used in the vicinity of Niğde, to determine the usage areas of these plants in the landscape and to identify the types of native plants that can be eaten in the region.

Materials and Method

Niğde is located in southeast of the Central Anatolia Region, to the north of the area where the Bolkarlar and Aladağlar, which are located in the Central Toros Mountains, are folded into the north (Anonymous, 2019). During field studies, in Alihoca, Darboğaz, Bahçeli, Gümüşler, Konaklı, Çarıklı, Çukurkuyu, Eminlik, Demirkazık, Sazlıca, Maden, Fertek, Kocapınar, Kumluca, Hamamlı, Küçükköy, Kemerhisar, Mahmutlu, Çiftlik, Pınarbaşı villages, the source was created according to the information obtained from the survey with 43 male, 76 female, 30-80 age group (Figure 1). The reason for the high number of women is that there are more women who benefit from various plants.

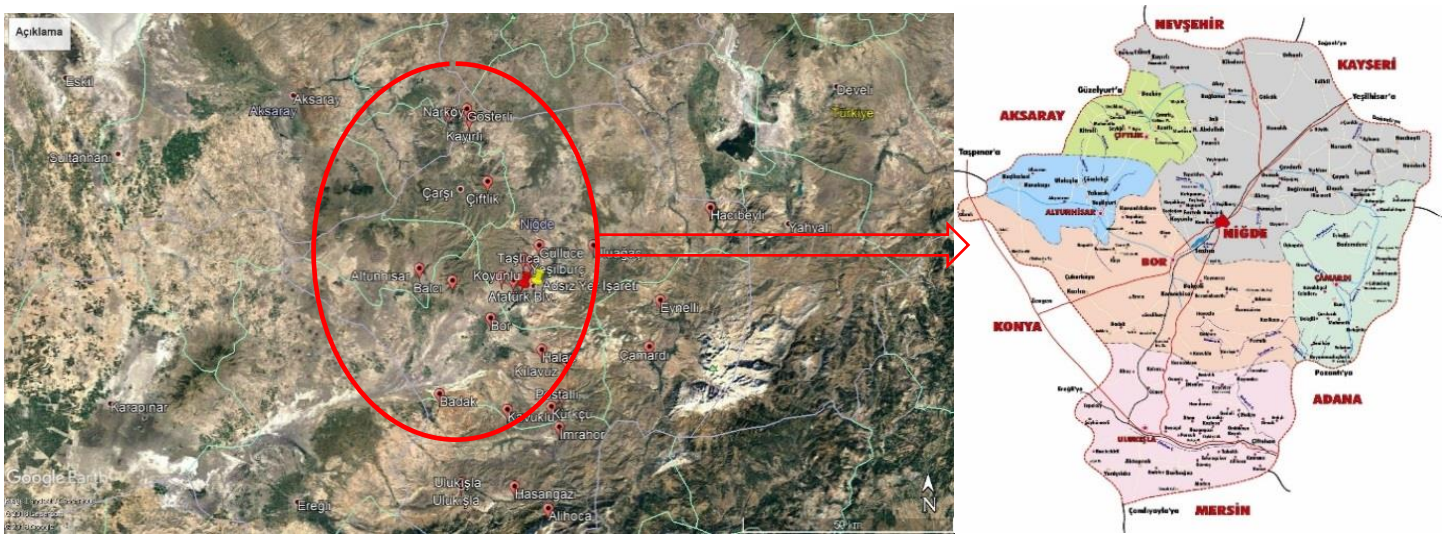

Figure 1. Research Area (Anonymous, 2019a)

Method

During the studies carried out in the research area, information on the local names of the plants mentioned and the parts of the plants that are used were obtained. In order to determine plant species from the local names, the pictures from the theses and the search engines (International Plant Names, bizimbitkiler.org.tr, tübives.com) on the webare shown to the people. Species are identified according to information obtained from "Flora of Turkey and the East Aegean Islands" (Davis, 1965-1985; Davis et al., 1988, Bulut et al. 2017), Niğde Ömer Halisdemir University Department of Biology Faculty Members, Ahi Evran University, Faculty of Agriculture Members and studies on the plants grow in Nigde was used for idendification. The habitats of the plants were used to determine the usage areas in the landscape. In the first mention of the names of the plants, the author is specified, in order to avoid repetition, the author is not given in the following names.

Data Collection

Direct interviews with people were performed from 2018 to 2019. A total of 119 informants were interviewed with oral prior informed consent in this region. During the interviews, we recorded demographic characteristics of the study participants, and local names, utilized parts and preparation methods of the plants.

Data Analysis

Data were processed using descriptive statistical technique. Fidelity Level (FL) was used to determine the maximum number of participants who preferred to treat the diseases (Njoroge, 2012).

Fidelity level (FL)

Fidelity level (FL) was, to determine the most preferred ethnomedicinal plant species used in the treatment of a particular ailment.

FL (%) =(Ip/Iu) *100

Where, Ip is the number of informants who independently indicated the use of a species for the same major ailment and If the total number of informants who mentioned the plant for any major ailment (Friedman et al. 1986).

Informant consensus factor

The Informant Consensus Factor (ICF) was calculated to see the agreement of informants for a plant species in treating a particular disease using a formula, ICF=Nur−Nt/ Nur−1, where Nur refers to the number of use reportin each category and Nt to the number of the species used. A high ICF indicates the informants agreement about the taxa used for the treatment of ailments of a certain use category (Table 1).

Use Value (UV)

The Use Value (UV) demonstrates the relative importance of plants known locally. It is given by the following formula: UV =ΣUi / N where, Ui is the number of uses mentioned by each informant for a given species and N is the total number of informants (Rana et al, 2015).

Relative frequency citation

The relative frequency citation (RFC) is given by RFC = FC/ N, where FC is the total number of informants that referred to the taxon and N is the total number of informants.

The cultural index (CI) is given by CI = UR/N, where UR (use-reports) is the use recorded for every taxa and N is the total number of informants. This index was used to estimate the cultural significance of each species, in other words, to verify, in quantitative terms, to what extent each species is present in the local culture and in the memory of the inhabitants in the study (Pardo et al, 2007).

Research Findings

A total of 62 medicinal plants, which belong to 32 families and 60 genera were recorded in the study area. The medical value of these species and their use in landscape architecture were determined (Table 2). The results gathered during the survey are summarized in Table 1, which provide the following information for each species: scientific name, local common name, treatment purpose, use area in landscape, cultural importance, relative frequency of citation, relative importance, cultural value, frequency of citation, number of use-reports and number of uses. The most represented families are Asteraceae with 8 species each followed by Rosaceae (7 species), Lamiaceae (5 species), Ranunculaceae (4 species), Solanaceae, Malvaceae and Caryophyllaceae (3 species), Brassicaceae, Fabaceae, Pinaceae, Polygonaceae were represented with two species each. Other families were represented with one species each.

Table 1. ICF values of category of ailments

Ailment	Number of taxa	Number of use report	ICF=Nur−Nt/ Nur−1
Antipyretic	8	51	0,86
Blood pressure diseases	17	59	0,72
Rheumatic pain	12	66	0,83
Gastrointestinal disorders	21	89	0,77
Respiratory diseases	11	58	0,82
Diabetes	7	32	0,80
Healing cut and wounds	8	46	0,84
Painkiller	9	56	0,85
Eye inflammation	13	72	0,83
Skin diseases	15	55	0,74
Urogenital and kidney problems	10	63	0,85
Internal and externalinflammatory problems	14	71	0,81
Sedative	4	23	0,86
Antiseptic	4	29	0,89

Table 2. The medical value of the species determined in the research and the usage status in landscape architecture

No	Family	Scientific Name	Local Common Name (Vascular Plants)	Treatment Purpose	Usage Area in Landscape	FC	RFC	CI	FL	UV	References
1	Araceae	*Arum italicum*	domuzlahanası	Fruit and tubers for the treatment of eczema	8,9	4	0,03	0,01	1,68	0, 16	Azab A. 2017
2	Xanthorrhoeaceae	**Asphodeline prismatocarpa*	gavursaçağı	In the treatment of wet wounds on the skin	1,3	3	0,02	0,01	1,68	0,16	Öztürk ve Altay, 2017
3	Asteraceae	*Achillea millefolium*	civanperçemi	Infectious diseases, stomach pain, expectorant	1,3, 5	11	0,09	0,02	2,52	0,25	Saeidnia et al. 2011.
4		*Anthemis cretica*	dağpapatyası	Used to treat balding	4,5,9	28	0,23	0,02	2,52	0,25	Başer et al. 2002.
5		*Artemisia alpina*	dağyavşanı	Antipyretic	6	58	0,48	0,008	0,84	0,08	Pieroni and Elena Giusti, 2009.
6		*Centaurea calcitrapa*	çobankaldıran	Antipyretic, skin diseases	3,5	2	0,01	0,01	1,68	0,16	Csupor et al. 2010.
7		*Helichrysum italicum*	maranda	Soothes chapped skin and burns	3,4,6	45	0,37	0,02	2,52	0,25	Antunes et al. 2014.
8		*Senecio vernalis*	kanaryaotu	Painkiller	4	17	0,14	0,008	0,84	0,08	Bagcı and Kılıç, 2011.
9		*Tanacetum vulgare*	yaygınpireotu	Skin itching	3,4,5,7	27	0,22	0,03	3,36	0,30	Ivanescu et al., 2018
10		*Tussilago farfara*	öksürükotu	Cough treatment	3,4,6	35	0,29	0,02	2,52	0,25	Nedelchevaa et al. 2015.
11	Boraginaceae	*Anchusa officinalis*	ballağan	Cough and cold treatment	5,6	19	0,15	0,01	1,68	0,16	Afifi and Abu-Irmaileh. 2010
12	Brassicaceae	*Capsella bursa-pastoris*	çobançantası	Gut, jaundice, internal and external bleeding	3,5	26	0,21	0,01	1,68	0,16	Al-Snafi, 2015.
13		*Raphanus raphanistrum*	eşekturpu	Rheumatism	5	44	0,36	0,008	0,84	0,08	Hameed, 2018..
14	Caryophyllaceae	*Dianthus crinitus*	uzunçanak	Seeds for toothache	3,6,7	72	0,6	0,02	2,52	0,25	Ahmadipour et al. 2015.
15		**Dianthus recognitus*	yazkaranfili	Treatment of cold, diuretic	1,3,6	83	0,69	0,02	2,52	0,25	Akdeniz and Zencirkıran, 2016.
16		*Silene vulgaris*	ecibücü	Eye inflammation	3,4,5,6	46	0,38	0,03	3,36	0,30	Candra and Rawat, 2015
17	Ephedraceae	*Ephedra major*	hum	Hay fever, cold	3,7,9	71	0,59	0,02	2,52	0,25	Jamshidi-Kia et al 2018.
18	Ericaceae	*Calluna vulgaris*	süpürgeçalısı	Urinary tract infections	3,6	91	0,76	0,01	1,68	0,16	Mantle et al. 2000
19	Euphorbiaceae	*Euphorbia macroclada*	neblul	In skin diseases, wounds, warts	1,3,5,7	57	0,47	0,03	3,36	0,30	Cakilcioğlu et al. 2011.
20	Fabaceae	*Astragalus hamosus*	koçboynuzu	Gum for Stomach Pain	4,6	5	0,04	0,01	1,68	0,16	Al-Snafi, 2015a.
21		*Ononis spinosa*	kayışkıran	Skin diseases and rheumatism	3,7	25	0,21	0,01	1,68	0,16	Menkovic et al. 2011.
22	Elaeagnaceae	*Elaeagnus angustifolia*	iğde	Antipyretic	4,5	43	0,36	0,01	1,68	0,16	Hamidpour et al. 2017.
23	Equisetaceae	*Equisetum arvense*	atkuyruğu	Urinary tract infections, dandruff	2	35	0,29	0,008	0,84	0,08	Carneiro et al., 2019.
24	Geraniaceae	*Erodium cicutarium*	iğnelik	Appetite enhancer	3,4	59	0,49	0,01	1,68	0,16	Al-Snafi, 2017
25	Iridaceae	*Crocus chrysanthus*	sarıçiğdem	Expectorant	3,4,7	65	0,54	0,02	2,52	0,25	Gohari et al. 2013
26	Juglandaceae	*Juglans regia*	ceviz	Against hair loss	3,5,7	73	0,61	0,02	2,52	0,25	Delaviz et al. 2017
27	Lamiaceae	*Lamium garganicum*	bolbalıcak	Sedative	3,4	85	0,71	0,01	1,68	0,16	Krawczyk et al. 2013
28		**Phlomis armeniaca*	bozşavlak	Leaves and flowers for diarrhea, stomach disorders	2,4	28	0,23	0,01	1,68	0,16	Fakir et al. 2009
29		*Salvia cadmica*	kayaşalbası	Cold, sore throat	3,4,5,7	89	0,74	0,03	3,36	0,30	Senol et al. 2016
30		*Salvia sclarea*	paskulak	Stomach and kidney pain	4,7	93	0,78	0,01	1,68	0,16	Peana and Moretti, 2002.
31		*Thymus sipyleus*	sipilkekiği	Abdominal pain and as spice	3,4	85	0,71	0,01	1,68	0,16	Özgen et al. 2006.
32	Liliaceae	*Tulipa humilis*	çobanlâlesi	Insect bites, bee stings	4,7	76	0,63	0,01	1,68	0,16	Behçet and Arık, 2013.
33	Loranthaceae	*Viscum album*	ökseotu	Diabetes, asthma	7	45	0,37	0,008	0,84	0,08	Kültür, 2007.
34	Malvaceae	*Althaea officinalis*	delihatmi	Treatment for cold, abscess	3,7	20	0,16	0,01	1,68	0,16	Halt,1998
35		*Alcea biennis*	fatmaanagülü	Treatment for cold, absess	3	2	0,01	0,008	0,84	0,08	Sargın et al. 2013
36		*Malva sylvestris*	ebegümeci	For shortness of breath	3,7	52	0,43	0,01	1,68	0,16	Ravazi et al. 2011

37	Nitrariaceae	*Peganum harmala*	üzerlik	In the treatment of warts	4,5,7	36	0,3	0,02	2,52	0,25	Niroumand et al. 2015
38	Papaveraceae	*Papaver bracteatum*	adamağusu	Painkiller	3,5,6,7	19	0,15	0,03	3,36	0,30	Parmaksız and Özcan, 2011
39	Pinaceae	*Abies cilicica* subsp. *cilicica*	torosgöknarı	Healing wounds	5,7	47	0,39	0,01	1,68	0,16	Tümen et al. 2011
40		*Cedrus libani* var. *libani*	katranağacı	Antiseptic	5,7	51	0,42	0,01	1,68	0,16	Alu'datt et al. 2016
41	Plantaginaceae	*Plantago asiatica*	kesikotu	Healing wounds	3,4	42	0,35	0,01	1,68	0,16	Yang et al. 2017
42	Polygonaceae	*Polygonum cognatum*	madımak	Diuretic, blood sugar lowering in diabetic patienc	4,7	38	0,31	0,01	1,68	0,16	Kibar and Kibar, 2017
43		*Rumex acetosella*	kuzukulağı	Skin diseases such as psoriasis and acne	3,4,5	13	0,1	0,02	2,52	0,25	Guarrera, 2003
44	Primulaceae	*Cyclamen coum*	yersomunu	Skin diseases and venomous animal bites	4,7	68	0,57	0,01	1,68	0,16	Yıldız et al. 2013
45	Ranunculaceae	*Adonis aestivalis*	kandamlası	Diuretic	4,5,6,8	10	0,08	0,03	3,36	0,30	Al-Snafi, 2016
46		*Delphinium staphisagria*	bitotu	As an emetic drug	3,5	4	0,03	0,01	1,68	0,16	Motti et al. 2018
47		*Nigella arvensis*	tarlaçörekotu	Diuretic	3,5	2	0,01	0,01	1,68	0,16	Alu'datt et al. 2016
48		*Ranunculus cornutus*	evlimemedotu	Knee pain	4,7	21	0,17	0,01	1,68	0,16	El-Alam et al. 2018
49	Resedaceae	*Reseda lutea*	muhabbetçiçeği	Mild Sedative and diuretic	3,4	5	0,04	0,01	1,68	0,16	Afifi et al. 2010
50	Rosaceae	*Agrimonia eupatoria* subsp. *asiatica*	fıtıkotu	In the treatment of sore throat	3,4,5	7	0,05	0,02	2,52	0,25	Natale and Pallio, 2007.
51		*Armeniaca vulgaris*	kayısı	Constipation	3,5,7	2	0,01	0,02	2,52	0,25	Korkmaz and Karkuş, 2015
52		*Crataegus monogyna* var. *monogyna*	yemişen	Diuretic	3,5,8	33	0,27	0,02	2,52	0,25	Altınterim, 2012
53		*Potentilla speciosa*	kayaparmakotu	Stomach Pain	3,5,7	17	0,14	0,02	2,52	0,25	Doğan and Bulut, 2016
54		*Amygdalus communis*	badem	Chest tightness, cough suppressant	3,5,7	51	0,42	0,02	2,52	0,25	Khalid, 2017
55		*Rosa canina*	kuşburnu	Cold	3,5,8	94	0,78	0,02	2,52	0,25	Eldahshan, and Rasoulian, 2018
56		*Rubus caesius*	Böğürtlen	Flu and colds	3,7	61	0,51	0,01	1,68	0,16	Dudzinska et al. 2016
57	Rubiaceae	*Galium aparine*	Yoğurt otu	Bites of poisonous animals	3,4	8	0,06	0,01	1,68	0,16	Parıhaar et al. 2014
58	Solanaceae	*Hyoscyamus reticulatus*	Ban otu	Worms in the eyes	1,2	3	0,02	0,01	1,68	0,16	Bustanji et al. 2011.
59		*Lycium barbarum*	Kurt Üzümü	Lowers cholesterol	5,7	16	0,13	0,01	1,68	0,16	Potterat, 2009
60		*Solanum americanum*	İt Üzümü	Used to treat stomach complaints and fever	5,7	3	0,02	0,01	1,68	0,16	Braga et al. 2007
61	Vitaceae	*Vitis vinifera*	Üzüm	Treatment for low blood count	5,6,7	**98**	0,82	0,02	2,52	0,25	Oskay and Sarı, 2007
62	Zygophyllaceae	*Zygophyllum fabago*	İt üzerliği	Skin diseases, injuries	3,5	5	0,04	0,01	1,68	0,16	Zaidi et al. 2005

Use potentials: 1: Plants to be used in landscape restoration and conservation, 2: Plants to be used in water gardens, 3: Plants to be used in rock and dry wall gardens, 4: Plants to be used as ground cover, 5: Plants to be used in the urban design, 6: Plants to be used in roof and terrace gardens, 7: Plants to be used in designs with special aims, 8. Visual areas beyond the reach of children because they are poisonous, 9. Sloping areas

Evaluation of Data Analysis

The most commonly used species is *Tanacetum vulgare* L. , *Silene vulgaris* (Moench) Garcke*, Euphorbia macroclada* Boiss.*, Salvia cadmica* Boiss.*, Papaver bracteatum* Lindl.*, Adonis aestivalis* L. with a use value of 0.30, followed by *Artemisia alpina Pall., Raphanus raphanistrum* L.*, Equisetum arvense* L.*, Viscum album* L.*, Alcea biennis* Winterl., which have use value of 0.08. The most rarely used plants values vary from 0.16 to 0.25 [Table 1]. The use categories with most use-reports are the categories of plants used for.

Gastrointestinal disorders (89 use-reports, 21 species), Eye inflammation (72 use-reports, 13 species), Internal and external inflammatory problems (71 use-reports, 14 species), Rheumatic pain (66 use-reports, 12 species), Urogenital and kidney problems (63 use-reports, 10 species), Blood pressure diseases (59 use-reports, 17 species), Respiratory diseases (58 use-reports, 11 species), Painkiller (56 use-reports, 9 species), skin diseases (55 use-reports, 15 species), Antipyretic (51 use-reports, 8 species), Healing cut and wounds (46 use-reports, 8 species), Diabetes (32 use-reports, 7 species), Antiseptic (29 use-reports, 4 species) and Sedative (23 use-reports, 4 species) and these use categories all had a high degree of consensus with ICF values greater than 0.70. The highest degrees of consensus (ICF=0.89, 0.86, 0.85 and 0.84) are, however, for Antiseptic, Antipyretic and Sedative, painkiller- Urogenital and kidney problems, Healing cut and wounds, Rheumatic pain-Eye inflammation, respiratory diseases, Internal and external inflammatory problems, diabetes, Gastrointestinal disorders, Skin diseases, Blood pressure, respectively [Table 2].

The category of plants used for treatment of Blood pressure diseases has the lowest degree of consensus (ICF = 0.72). Species with high use value appear to simultaneously be the preferred species [Table1 and 2]. Some plant species that are widely used and did show high use value are used for very specific therapeutic purposes, and we therefore found high FL for these plants; *Tanacetum vulgare, Silene vulgaris, Euphorbia macroclada, Salvia cadmica, Papaver bracteatum and Adonis aestivalis* all had FL of 3.36 [Table 1]. This finding proposed that there is a well-defined selection criterion for these use categories (Gazzaneo et al., 2005, Musa et al. 2011).

Table 1 shows the contribution of each use-category to the total cultural importance index (CI) of the 6 most relevant and useful species in the interior of Anatolia area. It is determined that *Calluna vulgaris* (L.) Hull., *Rosa canina* L., *Salvia sclarea* L.*, Salvia cadmica, Vitis vinifera* L. are preferred most of the plants suitable for medical purposes and landscaping.

The relative frequency citation (RFC)

Quantitative value indices were calculated to analyze plant use. The highest value of RFC ranked the *Vitis vinifera* (0.82) first, followed by *Salvia sclarea* (0.78) and *Salvia cadmica* (0.74) as second and third respectively.

When the RFC values in Table 1 are examined, it is seen that they are compatible with the FC value. Table 1 shows the 6 most popular medicinal plants with highest use value reported by the informants. As shown in Table 1, *Tanacetum vulgare, Silene vulgaris, Euphorbia macroclada, Salvia cadmica, Papaver bracteatum, Adonis aestivalis* have the highest use value (0.30). *Artemisia alpina, Senecio vernalis* Waldst. & Kit., *Raphanus raphanistrum, Equisetum arvense* and *Viscum album* have the lowest use value (0.08). *Tanacetum vulgare, Silene vulgaris, Papaver bracteatum* and *Adonis aestivalis* were found to be of potential use in in rock and dry wall gardens, as ground cover, in the urban design, in designs with special aims consisttent with the reports of Yılmaz et al (2009), Surat et al (2018). *Euphorbia macroclada* can be predicted that these species will be used in landscape restoration and conservation, in rock and dry wall gardens, in the urban design, in designs with special aims in landscape architecture due to both leaves and their beautiful appearance (Yener et al, 2019).

The value of RFC ranges from 1 percent to 82 percent in the medicinal use of plants/herbs. The former are linked to *Centaurea calcitrapa* L. from the family Asteraceae*, Alcea biennis* from the family Malvaceae*, Nigella arvensis* L. from the family *Ranunculaceae, Armeniaca vulgaris* Lam. from the family Rosaceae while the latter is associated with *Vitis vinifera* from family Vitaceae. However, on average, the relative frequency citation is 50 percent. Likewise the UV of medicinal plants ranges from 0.08 to 1.30 which shows least relative importance of *Centaurea calcitrapa* L. from the family Asteraceae to the highest importance for *Vitis vinifera* from family Vitaceae. These findings are consistent with that from RFC.

The most used plant species in the research area are *Asteraceae* and the least is *Zygophyllaceae* family.

According to the results of the research conducted in the region, *Arum italicum* Mill., *Asphodeline prismatocarpa* J.Gay ex Boiss., *Anthemis cretica* L., *Helichrysum italicum* (Roth) G.Don, *Euphorbia macroclada, Ononis spinosa* L., *Juglans regia* L., *Alcea rosea, Peganum harmala* L., *Abies cilicica* subsp. *cilicica, Cedrus libani* A.Rich., *Plantago asiatica* L., *Rumex acetosella* L., *Cyclamen coum* Mill., *Tanacetum vulgare, Zygophyllum fabago* L. are used to treat skin diseases. The least plant use is, *Capsella bursa-pastoris* (L.) Medik., in jaundice, *Dianthus crinitus* Sm., seeds for toothache, *Malva sylvestris* L. for shortness of breath, *Delphinium staphisagria* . as emetic, *Lycium barbarum* L. for lowering cholesterol, *Vitis vinifera* fruits for low blood count.

Plants used as antipyretics are *Artemisia caucasica, Centaurea calcitrapa* L., *Elaeagnus angustifolia* L.

Landscaping with *Medicinal Plants*

Landscaping with medicinal plants is done in several ways, such as plants to be used in landscape restoration and conservation, water gardens, rock and dry wall gardens, as ground cover, the urban design, roof and terrace gardens, designs with special aims and sloping areas. The most commonly use potentials were used plants to be used in rock and dry wall gardens (30% approximately), urban design (20% approximately), viual areas, sloping areas and water gardens (with 2% approximately). The remaining applications have about 48% of predominance. The area surveyed had a highly potential of native plant species for use in rock and dry wall gardens, which corroborates Yılmaz et al. (2003).

Plants that can be used in rock and dry wall gardens are: **Asphodeline prismatocarpa, Achillea millefolium* L., *Centaurea calcitrapa, Tussilago farfara* L. , *Capsella bursa-pastoris, Dianthus crinitus, *D. recognitus, Silene vulgaris, Helichrysum italicum, Ephedra major* Host., *Calluna vulgaris, Euphorbia macroclada, Astragalus hamosus* L., *Ononis spinosa* L., *Elaeagnus angustifolia, Erodium cicutarium* (L.) L Hér., *Crocus chrysanthus* (Herb.) Herb., *Juglans regia, Lamium garganicum* L., *Phlomis armeniaca* Willd., *Salvia cadmica, Thymus sipyleus Boiss., Althaea officinalis* L., *Alcea rosea, Malva sylvestris* L., *Papaver bracteatum, Plantago asiatica, Rumex acetosella, Delphinium staphisagria, Nigella arvensis, Reseda lutea* L., *Agrimonia eupatoria* L., *Armeniaca vulgaris, Crataegus monogyna* Jacq., *Potentilla speciosa* Willd., *Prunus amygdalus, Rosa canina, Rubus caesius* L., *Galium aparine* L., , *Tanacetum vulgare, Zygophyllum fabago.*

Plant species of importance in the use of vineyard houses are: *Senecio vernalis* Waldst., *Dianthus crinitus, Calluna vulgaris, Elaeagnus angustifolia, Juglans regia, Phlomis amaniaca, Thymus sipyleus, Tulipa humilis, Althaea officinalis, Alcea rosea, Abies cilicica, Cedrus libani, Rumex acetosella* L., *Cyclamen coum* Mill., *Armeniaca vulgaris, Crataegus monogyna* Jacq., *Prunus amygdalus* var. amara, *Lycium barbarum*, *Vitis vinifera.*

Arum italicum plants, tubers and fruits are used for medical purposes, the leaves and flowers of other determined species are used. Determined species are often used in the treatment of skin diseases and colds.

Plant that have edible fruits are; *Vitis vinifera, Lycium barbarum, Rubus caesius, Armeniaca vulgaris, Juglans regia, Elaeagnus angustifolia.*

Plants that can be used in pool areas and in humid environments are; *Equisetum arvense, Hyoscyamus reticulatus.*

Plants that can be used as ground cover are; *Anthemis cretica, Helichrysum italicum, Senecio vernalis, Tussilago farfara, Silene vulgaris, Astragalus hamosus, Erodium cicutarium, Crocus chrysanthus, Lamium garganicum, Salvia cadmica, S. sclarea, Thymus sipyleus, Tulipa humilis, Peganum harmala, Adonis vernalis, A. aestivalis, Ranunculus cornutus, Reseda lutea, Agrimonia eupatoria, Galium aparine, Tanacetum vulgare.*

Plants that can be used in roof and terrace areas are; *Vitis vinifera*, *Adonis vernalis, A. aestivalis, Papaver bracteatum, Astragalus hamosus, Helichrysum italicum, Dianthus crinitus, D. recognitus, Silene vulgaris, Anchusa officinalis, Tussilago farfara, Artemisia caucasica.*

Arum italicum is a plant that can only be used visually, because it is toxic and shouldn't be reached by children.

The plants identified and determined in the research area can be used as a medicinal plant and as well as be used in landscape design. Thus, continuity of natural plants will be ensured and contribution will be made to the economy.

Conclusion

Despite the fact that Turkey has many cultivated plants of the country agricultural country since ancient times and growing techniques, medicinal plants did not show enough improvement in agriculture. Most of the plants obtained are native species. In contrast, according to the results of the relevant culture experiments with some medicinal

plants in recent years in Turkey, it is found as possible to grow many medicinal plants efficiently (Bağcı et al., 2006).

There are also numerous medicinal and aromatic plants in and around Niğde. Studies on the use of these plants are not sufficient and the cultivation of the species identified as useful has not been carried out yet. It is seen that people only use these plants in their home gardens for their own needs or as ornamental plants. The local people collect these plants from nature for their own use, or to sell them in market and to the herbalists. People in Niğde and the villages around it have traditionally benefited from different plants as the healing effect in the past. Better training is required for treatment and applications. It can be difficult to find information and disseminate information about plants. During the harvesting of plants, people damage plants by removing the plants from their roots and collecting the flowers without forming seeds. After a while the plants are faced with extinction because of these reasons or are being completely destroyed.

This study will contribute to the determination of the richness of natural species and plant species to be used in landscape design. The conservation of species, ensuring continuity, the use of medicinal and aromatic plants in landscape design will have positive effects on public health. In home gardens, parks and road designs, area use, area planning and design studies, thinking visual and ecological status of plants and landscape components together will make the area more economical.

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