

Floristic Composition and Traditional Uses of Plant Species at Wadi Alkuf, Al-Jabal Al-Akhder, Libya

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Abstract: The present work is primarily a record for wild plant species grown in Wadi Alkuf valley during 2010-2013 and their traditional uses. The genera and species are arranged alphabetically under each family. The voucher specimens are preserved in Kelieda Herbarium of the Department of Botany, Omar Al Mukhtar University, Albaida, Libya. There are 365 species of flowering plants represented by 257 genera and 75 families besides gymnosperms and pteridophytes found in the region of Wadi Alkuf of Al-Jabal Al-Akhder, Libya. The valley is fairly rich where it harbors 29 endemic taxa. *Retama monosperma* (L.) Boiss. ssp. *bovei* (Spach) Maire and *Sanguisorba minor* Scop. ssp. *verrucosa* (Link & G. Don) Holmboe are considered as new records in the region.

Key words: Floristic composition • Traditional uses • Libya • Wadi Alkuf • Wild plant species

INTRODUCTION

Al-Jabal Al-Akhder is floristically one of the richest of all the phytogeographical region of Libya. Two major generalized types of vegetation; maquis and steppe are dominant in Wadi AlKuf. The maquis vegetation begins at the coast and extends across the upper terrace. The interior areas with lower rainfall totals, are dominated by a steppe vegetation of variable. The Mediterranean elements are the most represented in Wadi Alkuf such which indicate more affinities with the flora of Crete and west Mediterranean lands [1,2]. It is remarkable to note that more than 90% of the Mediterranean elements are found in the Al-Jabal Al-Akhder region [1]. Some species used in honey production such as *Arbutus pavarii* (Hanon honey), *Ballota pseudodictamnus* (Mayla honey), *Thymus capitatus* (Zaatar honey), *Rosmarinus officinalis* (Iklil honey), *Ziziphus lotus* (Sidr honey) and *Cynara cyrenaica* (Qahmoul honey). The vegetation in the study area being under heavy pressure due to overgrazing, woodcutting, agricultural expansion, plant collection and the effect of fire. Therefore, a number of plants such as *Arbutus pavarii*, *Myrtus communis*, *Quercus coccifera* and *Rosmarinus officinalis* are under threat of extinction due to

deforestation, habitat destruction and overexploitation. Asker [3] noted that the Al-Jabal Al-Akhder region is continuously under the pressure of man and his animal flocks which are continuously changing the vegetation. Excessive grazing, cutting of trees and shrubs for charcoal and brushwood and clearing the vegetation for cultivating the ground to be abandoned later (what is known as shifting cultivation) is carried out in many parts of the area. There is an urgent need for international assistance to collect the endangered plants and to conserve the genetic resources.

Therefore, the present study aimed to record wild plant species grown in Wadi Alkuf and their traditional uses.

MATERIALS AND METHODS

Study Area: Wadi Alkuf is located at 32° 41' N latitude and 21° 38' E longitude, at an altitude of 360 m in Al-Jabal Al-Akhder (Green Mountain) of Libya (Fig. 1). The valley is about 22 km long, starting from Benghazi-Albaida road towards north and ends in Mediterranean Sea. The soil varies from clay to clay loam at different locations. It is rich in calcium carbonate (25%) with pH 8 and nitrogen and organic matter content were about 0.33 and 7%.

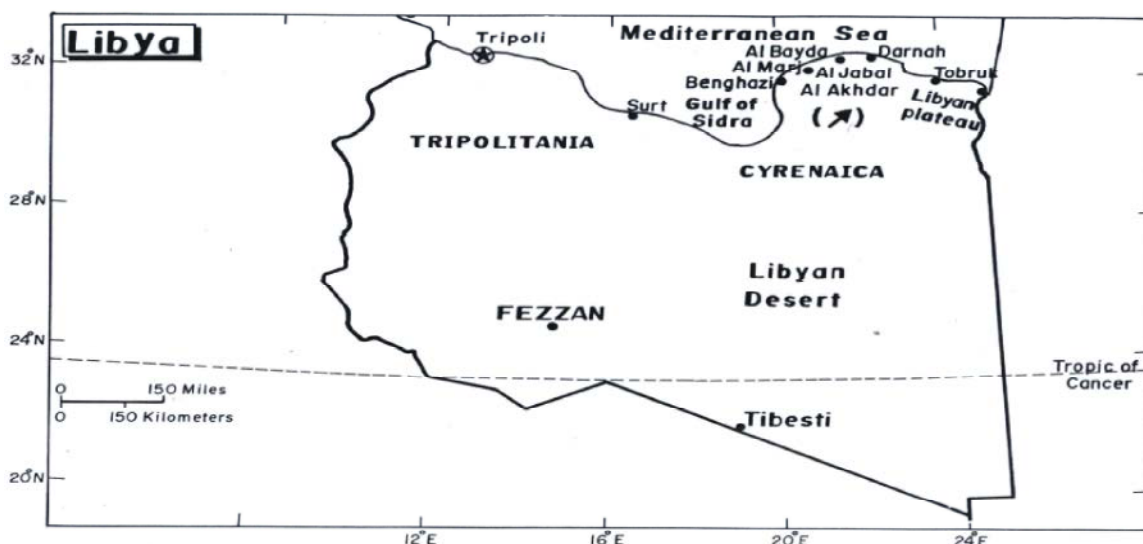


Fig. 1: A map showing the study area (↗)

The average annual rainfall in the valley 520 mm, most of which is received during the months of December to February. The temperature shows great fluctuations in summer and winter. The minimum temperature drops to 1° in cold frosty nights of January and the maximum rises up to 24° in June. Relative humidity ranges from 50-55 (May and June) to 65-70% (November to January).

Plant Species Collection and Identification: Data of the present study was collected in field trips from 2010 to 2013. Plant specimens were collected during flowering and fruiting stages as much as possible. The identification of the specimens was carried out according to Boulos [4-7], Ali and Jafri [8], Jafri and El-Gadi [9] and El-Gadi [10]. Wherever possible, identification was confirmed by comparing with the authentically identified specimens in the herbarium. The voucher specimens have been deposited in the Kelieda Herbarium, Botany Department, Omar Al-Mokhtar University, Libya. The life forms were identified according to the scheme of Raunkiaer [11] system. The contribution made by each life form to the overall flora of the study area was expressed as a percentage of the total number of species and the resulting life form spectrum is depicted graphically.

Ethnobotanical Data: Open-ended questionnaires [12] were applied separately for each informant to attain the ethnobotanical data concerning the studied species. The interviewees were more than 50 years old, men (only three cases were women) and 20 of them acquired only the bases of reading and writing (25 did not

receive any education). Specific questions focused on the different ethnobotanical uses traditionally practiced in the area were asked for the interviewees. Nevertheless, details for the different medicinal uses were also considered.

RESULTS

Floristic Composition: A total of 365 species of flowering plants representing 257 genera and 75 families have been collected from Wadi Alkuf (Table 1). Asteraceae was the most dominant family with 50 species, followed by Fabaceae (36), Lamiaceae (24) and Poaceae (17). *Retama monosperma* (L.) Boiss. subsp. *bovei* (Spach) Maire. and *Sanguisorba minor* Scop. subsp. *verrucosa* (Link & G. Don) Holmboe, have been collected from the study area for the first time and constitute new records for Libya. The following 29 taxa collected from Wadi Alkuf are endemic to Libya: *Allium longanum*, *Allium ruhmerianum*, *Arbutus pavarii*, *Arum cyrenaicum*, *Bellevalia cyrenaica*, *Bellis sylvestris*, *Capparis spinosa*, *Centaurea cyrenaica*, *Crocus boullousii*, *Cupressus sempervirens*, *Cyclamen rohlfsianum*, *Cynara Cyrenaica*, *Echinops cyrenaicus*, *Linaria laxiflora*, *Linaria tarhunesis*, *Onopordum cyrenaicum*, *Onosma cyrenaicum*, *Orchis cyrenaica*, *Origanum cyrenaicum*, *Parentucellia floribunda*, *Plantago cyrenaica*, *Polygala aschersoniana*, *Ranunculus cyclocarpus*, *Romulea cyrenaica*, *Silene cyrenaica*, *Stachys rosea*, *Teucrium barbayanum*, *Teucrium davaeanum* and *Valerianella petrovitchii*.

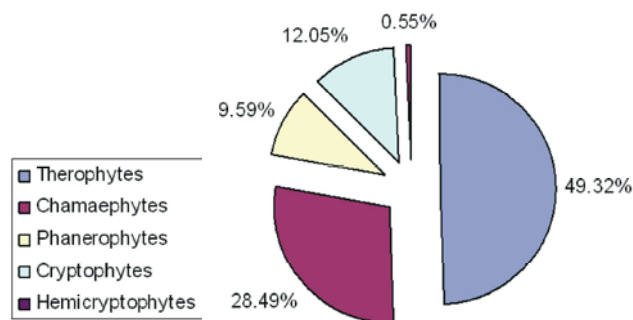


Fig. 2: Diagram showed the biological spectrum of the species in the study area

Table 1: List of plant species collected from Wadi Alkuf region.

Family	Scientific name	Local name
A. Pteridophyta		
Adiantaceae	<i>Adiantum capillus-veneris</i> L.	Kuzbart El-Bir
Aspleniaceae	<i>Ceterach officinarum</i> DC.	--
Gymnogrammeaceae	<i>Anogramma leptophylla</i> (L.) Link	--
Polypodiaceae	<i>Polypodium cambricum</i> L.	--
Selaginellaceae	<i>Selaginella denticulata</i> (L.) Spreng.	--
	<i>Cheilanthes pteridioides</i> (Reichard) C. Chr.	--
	<i>Cheilanthes vellea</i> (Ait.) F. Muell	--
B. Gymnospermae		
	<i>Cupressus sempervirens</i> L. var. <i>horizontalis</i> (Mill.) Gordon	Srow
	<i>Juniperus phoenicea</i> L.	Arar
	<i>Ephedera alata</i> Decne.	
	Alendi	
	<i>Ephedera altissima</i> Desf	--
Pinaceae	<i>Pinus halepensis</i> Mill.	Senouber
C. Angiospermae		
I. Dicotyledoneae		
Aizoaceae	<i>Mesembryanthemum crystallinum</i> L.	--
Amaranthaceae	<i>Amaranthus hybridus</i> L.	--
	<i>Amaranthus viridis</i> L.	--
	<i>Pistacia atlantica</i> Desf.	--
	<i>Pistacia lentiscus</i> L.	Battoum
	<i>Rhus tripartita</i> (Ucria) Grande	Gadri
Apiaceae (Umbelliferae)	<i>Ammi majus</i> L.	Khilla
	<i>Ammi visnaga</i> (L.) Lam	--
	<i>Apium graveolens</i> L.	--
	<i>Conium maculatum</i> L.	Shawkaran
	<i>Daucus syrticus</i> Murb.	--
	<i>Deverra tortuosa</i> (Desf.) DC.	Qazzah
	<i>Eryngium campestre</i> L.	Sqaqeel
	<i>Ferula tingitana</i> L	--
	<i>Lagoecia cuminoides</i> L.	--
	<i>Malabaila suaveolens</i> Delile & Coss.	--
	<i>Smyrnum olusatrum</i> L.	--
	<i>Thapsia garganica</i> L.	Derias
	<i>Torilis arvensis</i> (Huds.) Link	--
Apocynaceae	<i>Nerium oleander</i> L.	Defla
Asclepiadaceae	<i>Caralluma europaea</i> (Guss.) N.E.Br.	Adghamus
	<i>Periploca angustifolia</i> Labill.	Helaab
	<i>Achillea santolina</i> L.	Zefra
	<i>Anacyclus clavatus</i> (Desf.) Pers	--
	<i>Anthemis cyrenaica</i> Coss. var. <i>cyrenaica</i>	--
	<i>Anthemis secundiramea</i> Biv.	--

Table 1: Continued

<i>Artemisia campestris</i> L.	--
<i>Artemisia judaica</i> L. subsp. <i>sahariensis</i> (Chevall) Maire	--
<i>Asteriscus pygmaeus</i> (DC.) Cosson & Durieu	Serat El- Kabesh
<i>Bellis annua</i> L.	--
<i>Bellis sylvestris</i> Cyn. var. <i>cyrenaica</i> Beg.	Aen El-Samesh
<i>Calendula arvensis</i> L.	--
<i>Carduus getulus</i> Pomel	--
<i>Carlina lanata</i> L.	--
<i>Centaurea alexandrina</i> Delile	--
<i>Centaurea cyrenaica</i> Beguinot & Vacc.	--
<i>Cicerbita haimanniana</i> (Ascher.) Beau	--
<i>Cichorium endivia</i> L. subsp. <i>Divaricatum</i> (Schousb.) P.D. Sell	Shikoria
<i>Cichorium spinosum</i> L.	--
<i>Conyza bonariensis</i> (L.) Cronquist	Lihyat El-Sheikh
<i>Crepis senecioides</i> Delile subsp. <i>filiformis</i> (Viv.) Alavi	--
<i>Cynara cyrenaica</i> Maire & Weiller	Qahmoul
<i>Dittrichia viscosa</i> (L.) W. Greuter	--
<i>Echinops cyrenaicus</i> Durand & Barratt.	--
<i>Echinops galalensis</i> Schweinf.	--
<i>Evax pygmaea</i> L. Brot	--
<i>Hedypois cretica</i> (L.) Dum.	--
<i>Helichrysum stoechas</i> (L.) Moench	Eshbet Larnab
<i>Hyoseris scabra</i> L.	--
<i>Glebionis coronaria</i> (L.) Tzvelev	--
<i>Launaea nudicaulis</i> (L.) Hooker.	Oqhowan
<i>Launaea tenuiloba</i> (Boiss.) O. Kuntze	--
<i>Leontodon tuberosus</i> L.	--
<i>Mantisalca duriaei</i> (Spach.) Briq. & Cavillier	--
<i>Matricaria aurea</i> (Loefl.) Sch.Bip.	Qomialah
<i>Notobasis syriaca</i> (L.) Cass.	--
<i>Onopordum cyrenaicum</i> Maire & Weiller	Shouk El-Gamal
<i>Onopordum espiniae</i> Coss & Bonnet	--
<i>Phagnalon rupester</i> (L.) DC.	Taam El-Arnab
<i>Phagnalon saxatile</i> (L.) Cass.	--
<i>Picris asplenoides</i> L.	--
<i>Picris mauginiana</i> Pamp.	--
<i>Pulicaria vulgaris</i> Gaertn.	--
<i>Reichardia tingitana</i> (L.) Roth	--
<i>Scorzonera undulata</i> Vahl	--
<i>Senecio leucanthemifolius</i> Poir.	--
<i>Seriphidium herba-album</i> (Asso.) Sojak	Shih
<i>Sonchus asper</i> (L.) Hill	Teffaf
<i>Sonchus oleraceus</i> L.	--
<i>Sylibum marianum</i> (L.) Gaetner	--
<i>Tyrimnus leucographus</i> (L.) Cass.	Shbet
<i>Urospermum picroides</i> (L.) F.W.Schmidt	--
<i>Xanthium spinosum</i> L.	--
<i>Anchusa hybrida</i> Ten.	--
<i>Anchusa undulata</i> L. subsp. <i>hybrida</i> (Ten.) Be'g.	Harsha
<i>Borago officinalis</i> L.	--
<i>Cerintho major</i> L.	Henet Al-gola
<i>Cynoglossum cheirifolium</i> L.	--
<i>Echium angustifolium</i> Mill.	--
<i>Echium sabulicolum</i> Pomel	--
<i>Echium setosum</i> Vahl.	--
<i>Heliotropium curassavicum</i> L.	--
<i>Molkiopsis callosa</i> (Vahl) Wettst.	--

Table 1: Continued

	<i>Lithodora rosmarinifolia</i> (Ten.) I. M. Johnst.	--
	<i>Onosma cyrenaicum</i> Durand & Barratte	--
	<i>Alyssum minus</i> (L.) Rothm.	--
	<i>Biscutella didyma</i> L.	--
	<i>Cakile maritima</i> Scop. subsp. <i>aegyptiaca</i> (Willd.) Nyman.	Mekhlat El-raeie
	<i>Capsella bursa-pastoris</i> (L.) Medik.	--
	<i>Didesmus aegyptius</i> (L.) Desv.	--
	<i>Diptotaxis harra</i> (Forsk.) Boiss.	--
	<i>Enarthrocarpus pterocarpus</i> (Pers.) DC.	--
	<i>Lobularia libyca</i> (Viv.) C.F.W. Meissn.	--
	Awent El-Hanesh	
	<i>Matthiola fruticulosa</i> (L.) Maire.	Shaqaara
	<i>Matthiola longipetala</i> (Vent.) DC.	--
	<i>Rapistrum rugosum</i> (L.) All.	--
	<i>Sinapis alba</i> L.	Kardel
	<i>Sisymbrium irio</i> L.	--
Capparaceae	<i>Capparis spinosa</i> L. var. <i>krugeri</i> (Pamp.) Gafri	Kabbar
	<i>Lonicera etrusca</i> Santi	
	Jummet Fata	
	<i>Viburnum tinus</i> L.	Memakh
	<i>Cerastium illyricum</i> Ard.	--
	<i>Paronychia arabica</i> (L.) DC.	Gefet Al-abd
	<i>Paronychia argentea</i> Lam.	--
	<i>Silene cyrenaica</i> Maire & Weiller	--
	<i>Silene gallica</i> L.	--
	<i>Atriplex halimus</i> L.	Qataf
	<i>Bassia indica</i> (Wight) A.J. Scott	--
	<i>Chenopodium ambrosioides</i> L.	--
	<i>Chenopodium foliosum</i> (Moench) Asch.	--
	<i>Chenopodium murale</i> L.	Effena
	<i>Cistus incans</i> L.	--
	<i>Cistus parviflorus</i> Lam.	Birbish Ahmer
	<i>Cistus salvifolius</i> L.	Birbish Abid
	<i>Fumana arabica</i> (L.) Spach.	--
	<i>Fumana scoparia</i> Pomel	--
	<i>Helianthemum virgatum</i> (Desf.) Pres.	--
	<i>Hypericum aegypticum</i> L.	--
	<i>Hypericum empetrifolium</i> Willd.	--
	<i>Convolvulus althaeoides</i> L.	--
	<i>Convolvulus arvensis</i> L.	Olleiq
	<i>Convolvulus humilis</i> Jacq.	--
	<i>Convolvulus siculus</i> L.	--
	<i>Cuscuta epithymum</i> (L.) Murray	--
	<i>Cuscuta monogyna</i> Vahl	--
	<i>Cuscuta planiflora</i> Ten.	Hariet El-Zaatar
	<i>Sedum album</i> L.	--
	<i>Sedum rubens</i> L.	--
	<i>Sedum sediforme</i> (Jacq.) Pau.	--
	<i>Umbilicus horizontalis</i> (Guss.) DC.	--
	<i>Bryonia cretica</i> L.	--
	<i>Ecballium elaterium</i> (L.) A. Rich.	Buzzate
Dipsacaceae	<i>Scabiosa arenaria</i> Forssk.	--
	<i>Arbutus pavarii</i> Pamp.	Shmary
	<i>Erica multiflora</i> L.	Khalang
	<i>Erica sicula</i> Guss.	--
	<i>Chrozophora obliqua</i> (L.) Juss.	--
	<i>Euphorbia dendroides</i> L.	Halablab

Table 1: Continued

	<i>Euphorbia helioscopia</i> L.	--
	<i>Euphorbia paralias</i> L.	Libbeina
	<i>Euphorbia retusa</i> Forssk.	--
	<i>Euphorbia squamigera</i> Lois.	--
	<i>Mercurialis annua</i> L.	--
	<i>Ricinus communis</i> L.	Kherwa
	<i>Anagyris foetida</i> L.	Kharroub El-Klab
	<i>Anthyllis tetraphylla</i> L.	--
	<i>Astragalus vogelii</i> (Webb) Bornm.	--
	<i>Bituminaria bituminosa</i> (L.) C. H. Stirt.	--
	<i>Calicotome spinosa</i> (L.) Link	--
	<i>Calicotome villosa</i> (Poir.) Link	Gandol
	<i>Ceratonia siliqua</i> L.	Kharroub
	<i>Genista acanthoclada</i> DC.	--
	<i>Hymenocarpus circinnatus</i> (L.) Savi	--
	<i>Lathyrus aphaca</i> L.	--
	<i>Lotus edulis</i> L.	--
	<i>Lotus tetragonolobus</i> L.	Garambush
	<i>Medicago minima</i> L.	--
	<i>Medicago orbicularis</i> (L.) Bart.	--
	<i>Medicago polymorpha</i> L.	--
	<i>Melilotus indicus</i> (L.) All.	Qort
	<i>Melilotus sulcatus</i> Desf.	--
	<i>Onobrychis crista-galli</i> (L.) Lam.	--
	<i>Ononis hispida</i> Desf.	--
	<i>Ononis natrix</i> L.	--
	<i>Ononis reclinata</i> L.	--
	<i>Ononis viscosa</i> L.	--
	<i>Psoralea bituminosa</i> L.	--
	<i>Retama monosperma</i> (L.) Boiss. subsp. <i>bovei</i> (Spach) Maire.	--
	<i>Retama raetam</i> (Forsk) Webb.	Ratam
	<i>Scorpiurus muricatus</i> L.	--
	<i>Spartium junceum</i> L.	Retema– Wazal
	<i>Trifolium angustifolium</i> L.	--
	<i>Trifolium campestre</i> Schreb.	--
	<i>Trifolium purpureum</i> Loisel.	--
	<i>Trifolium stellatum</i> L.	--
	<i>Trifolium tomentosum</i> L.	--
	<i>Vicia monantha</i> Retz.	--
	<i>Vicia sativa</i> L.	--
	<i>Vicia villosa</i> Roth	--
Fagaceae	<i>Quercus coccifera</i> L.	Ballout
	<i>Fumaria judaica</i> Boiss.	Sfinari El-Hamer
	<i>Fumaria macrocarpa</i> Parlatore	--
	<i>Erodium crassifolium</i> L'H'er. in Aiton	Yebret El-gola
	<i>Erodium gruinum</i> (L.) L'H'er. in Aiton	--
	<i>Geranium molle</i> L.	--
	<i>Geranium rotundifolium</i> L.	--
	<i>Globularia alypum</i> L.	--
	<i>Globularia arabica</i> Jaub. & Spach	Zerreiga
	<i>Ajuga iva</i> (L.) Schreb.	Shandaqora
	<i>Ballota pseudodictamnus</i> (L.) Benth.	Mayla
	<i>Calamintha incana</i> (Sm.) Heldr.	--
	<i>Lamium amplexicaule</i> L.	--
	<i>Lavandula multifida</i> L.	Khozama
	<i>Lavandula multifida</i> L.	--
	<i>Marrubium vulgare</i> L.	Roubiya

Table 1: Continued

	<i>Micromeria juliana</i> (L.) Benth	--
	<i>Micromeria nervosa</i> (Desf.) Benth.	--
	<i>Nepeta scordotis</i> L.	--
	<i>Origanum cyrenaicum</i> Beg. & Vacc.	--
	<i>Phlomis floccosa</i> D. Don	Zeheira
	<i>Prasium majus</i> L.	--
	<i>Rosmarinus officinalis</i> L.	Ikkill
	<i>Salvia fruticosa</i> Mill.	--
	<i>Salvia lanigera</i> Poir.	--
	<i>Satureja thmbra</i> L.	--
	<i>Siderites curvidens</i> Stapf	--
	<i>Stachys rosea</i> (Desf.) Boiss.	--
	<i>Stachys tournefortii</i> Poir.	--
	<i>Teucrium barbeyanum</i> Asch.	--
	<i>Teucrium brevifolium</i> Schreb.	--
	<i>Teucrium davaeanum</i> Coss.	--
	<i>Teucrium polium</i> L.	Gaada
	<i>Thymus capitatus</i> (L.) Link	Zaatar
Lauraceae	<i>Laurus nobilis</i> L.	Ghar- Rand
	<i>Linum bienne</i> Miller	--
	<i>Linum nodiflorum</i> L.	--
	<i>Linum strictum</i> L. var. <i>spicatum</i> Pers.	--
	<i>Athaea hirsuta</i> L.	--
	<i>Lavatera bryoniifolia</i> Mill.	--
	<i>Malva aegyptia</i> L.	Khobbeiza
	<i>Malva parviflora</i> L.	--
	<i>Malva sylvestris</i> L.	--
Myrtaceae	<i>Myrtus communis</i> L.	Mersin
	<i>Olea europaea</i> L. subsp. <i>europaea</i> var. <i>sylvestris</i> (Mill.) Lehr	Zaitoun
	<i>Phillyrea angustifolia</i> L.	Sakhab
	<i>Phillyrea latifolia</i> L.	--
	<i>Orobancha coelestis</i> (Reut.) Boiss.	Halok
	<i>Orobancha lavandulacea</i> Rechenb.	--
Oxalidaceae	<i>Oxalis pes-caprae</i> L.	Hommeida
	<i>Glaucium flavum</i> Cranz	Qarn El-Jedyan
	<i>Papaver hybridum</i> L.	--
	<i>Papaver rhoeas</i> L.	Bouqaroun
	<i>Plantago albicans</i> L.	--
	<i>Plantago cyrenaica</i> Durand & Barrate	--
	<i>Plantago lanceolata</i> L.	Anam
	<i>Plantago major</i> L.	Lisan El-Jadi
	<i>Plantago notata</i> Lag.	--
	<i>Limoniastrum monopetalum</i> (L.) Boiss.	--
	<i>Limonium pruinosum</i> (L.) Chaz.	--
	<i>Limonium tubiflorum</i> (Delile) Kuntze	--
Polygalaceae	<i>Polygala aschersoniana</i> Chodat	--
	<i>Polygonum aviculare</i> L.	--
	<i>Polygonum equisetiforme</i> Sm.	Qordaab
Portulacaceae	<i>Portulaca oleracea</i> L.	Belbisha
	<i>Anagallis arvensis</i> L.	--
	<i>Cyclamen rohlfsianum</i> Asch.	Rakaf
Rafflesiaceae	<i>Cytinus hypocistis</i> L.	--
	<i>Adonis dentata</i> Delile	--
	<i>Adonis microcarpa</i> DC.	--
	<i>Clematis cirrhosa</i> L.	--
	<i>Delphinium ambiguum</i> L.	--

Table 1: Continued

	<i>Myosurus minimus</i> L.	--
	<i>Ranunculus asiaticus</i> L.	--
	<i>Ranunculus cyclocarpus</i> Pamp.	--
	<i>Ranunculus paludosus</i> Poir.	--
	<i>Reseda alba</i> L.	--
	<i>Reseda villosa</i> L.	--
	<i>Rhamnus alaternus</i> L. ssp <i>alaternus</i>	--
	<i>Rhamnus lycioides</i> L.	Sellouf
	<i>Ziziphus lotus</i> (L.) Lam.	Sidr –Nabq
	<i>Rubus sanctus</i> Schreb.	Tout Shouki
	<i>Sacropoterium spinosum</i> (L.) Spach	Shobroq
	<i>Sanguisorba minor</i> Scop. subsp. <i>verrucosa</i> (Link & Don) Holmboe	--
	<i>Galium murale</i> (L.) All.	--
	<i>Sherardia arvensis</i> L.	--
	<i>Valantia lanata</i> Delile & Coss.	--
	<i>Antirrhinum siculum</i> Mill.	--
	<i>Kickxia aegyptiaca</i> (L.) Nabelek subsp. <i>aegyptiaca</i>	--
	<i>Linaria laxiflora</i> Desf. subsp. <i>calcarlongum</i> Qaiser	--
	<i>Linaria tarhunesis</i> Pamp.	--
	<i>Linaria virgata</i> (Poir) Desf.	--
	<i>Misopates orontium</i> (L.) Rafin.	Shagaret El-hesan
	<i>Parentucellia floribunda</i> (Viv.) Pamp.	--
	<i>Scrophularia canina</i> L.	--
	<i>Verbascum sinuatum</i> L.	--
	<i>Datura innoxia</i> Mill.	Fadda
	<i>Lycium europaeum</i> L.	Awsaj
	<i>Nicotiana glauca</i> R.C.Graham	Akkuz Musa
	<i>Solanum elaeagnifolium</i> Cav.	--
	<i>Solanum nigrum</i> L.	Enab El-Deeb
	<i>Solanum sodomium</i> L.	Teffah El-Qoula
	<i>Withania somnifera</i> (L.) Dunal	Foul El-Kelab
Theligonaceae	<i>Theligonum cynocrambe</i> L.	--
	<i>Daphne jasminea</i> Sibth. & Sm.	--
	<i>Thymelaea hirsuta</i> (L.) Endl.	Methnan
	<i>Urtica dioica</i> L.	--
	<i>Urtica pilulifera</i> L.	Horreiq
Methnan	<i>Centranthus calcitrapae</i> (L.) Dufresne	--
	<i>Fedia caput-bovis</i> Pomel	--
	<i>Valerianella muricata</i> Asch.	--
	<i>Valerianella petrovitchii</i> Asch	--
Violaceae	<i>Viola scorpiuroides</i> Coss.	--
	<i>Fagonia arabica</i> L.	--
	<i>Fagonia cretica</i> L.	Taleha
	<i>Zygophyllum album</i> L.	Balbal – Rotreit
2. Monocotyledoneae	<i>Allium erdelii</i> Zucc.	--
	<i>Allium longanum</i> Pamp.	--
	<i>Allium orientale</i> Boiss.	--
	<i>Allium roseum</i> L.	Gassol
	<i>Allium ruhmerianum</i> Aschers.	--
	<i>Narcissus tazetta</i> L.	Nargis
	<i>Pancreatium maritimum</i> L.	Nowar El-Klab
	<i>Arisarum vulgare</i> Targ.	Wadn El-saloqi
	<i>Arum cyrenaicum</i> Hruby.	Renish
	<i>Bolboschoenus glaucus</i> (Lam.) S.G. Smith	--
	<i>Cyperus kalli</i> (Forsk.) Murbeck.	Saad

Table 1: Continued

Dioscoreaceae	<i>Tamus communis</i> L.	--
	<i>Crocus boullosii</i> Greuter.	--
	<i>Gladiolus byzantinus</i> Miller	Saif El-grab
	<i>Gladiolus segatum</i> Ker. Gowl.	--
	<i>Iris planifolia</i> (Mill.) Durand& Barratte	--
	<i>Iris sisyrinchium</i> L.	--
	<i>Romulea cyrenaica</i> Beguinot.	--
	<i>Romulea ramiflora</i> Ten.	--
Juncaceae	<i>Juncus acutus</i> L.	Dees
	<i>Androcymbium gramineum</i> (Cav.) Mc.	--
	<i>Asparagus acutifolius</i> L.	--
	<i>Asparagus albus</i> L.	--
	<i>Asparagus stipularis</i> Forssk.	Jafaraz
	<i>Asphodelus aestivus</i> Brot.	Onsol
	<i>Bellevalia cyrenaica</i> Alavi.	--
	<i>Bellevalia sessiliflora</i> (Viv.) Kunth	--
	<i>Colchicum ritchii</i> R.Br.	--
	<i>Gagea reticulata</i> (Pall.) Schult.	--
	<i>Muscari racemosum</i> (L.) Mill.	--
	<i>Ornithogalum arabicum</i> L.	--
	<i>Ornithogalum tenuifolium</i> Guss.	Rough
	<i>Smilax aspera</i> L.	--
	<i>Urginea autumnalis</i> (L.) El-Gadi	Faron
	<i>Urginea maritima</i> (L.) Baker	--
	<i>Urginea undulata</i> (Desf.) Steinb.	--
	<i>Barlia robertiana</i> (Lois.) W.Greuter	--
	<i>Ophrys fusca</i> Link	--
	<i>Ophrys speculum</i> Link	--
	<i>Orchis cyrenaica</i> Dur. & Barr.	--
	<i>Orchis italica</i> Poir.	--
	<i>Ammophila australis</i> (Mabill) Port & Rigo	Kasb El-remal
	<i>Avena barbata</i> Pott & Link	Khafour
	<i>Avena sterilis</i> L.	--
	<i>Briza maxima</i> L.	--
	<i>Bromus diandrus</i> Roth	--
	<i>Bromus rigidus</i> Roth	--
	<i>Bromus rubens</i> L.	--
	<i>Catapodium rigidum</i> (L.) C.E.Hubb.	--
	<i>Cynodon dactylon</i> (L.) Pers.	Negeila
	<i>Hordeum murinum</i> L. subsp. <i>glaucum</i> (Steud.)	--
	<i>Lagurus ovatus</i> L.	--
<i>Lamarckia aurea</i> (L.) Moench	Sammah	
<i>Lolium rigidum</i> Gaudin	--	
<i>Melica minuta</i> L.	--	
<i>Phalaris minar</i> Retz.	--	
<i>Poa annua</i> L.	--	
<i>Sporobolus pungens</i> (Schreb.) Kunth	--	
Posidoniaceae	<i>Posidonia oceanica</i> (L.) Delile	Tibn El-Bahr

Table 2: The traditional uses of plant species collected from Wadi Alkuf region

Scientific name	Local name	Traditional Uses
<i>Achillea santolina</i>	Zefra	Eczema, Toothache
<i>Adiantum capillus-veneris</i>	Kuzbart El-Bir	Diuretic, Expectorant, Lactagogue, Root hair stimulant, Bronchitis, Renal stones
<i>Ajuga iva</i>	Shandaqora	Diabetes, Diarrhea, Gastritis, Ulcer, Indigestion, Vermicide, Emetic, Dyspepsia
<i>Allium roseum</i>	Gassol	Hypertension, Common cold, Influenza, Fever
<i>Ammi majus</i>	Khilla	Stroke
<i>Arbutus pavarii</i>	Shmary	Gastritis, Laxative, Urinary tract infection, Epigastritis, Renal colic, Constipation
<i>Arum cyreanicum</i>	Renish	Dermatitis, Psoriasis, Corn, Bone spur
<i>Asphodelus aestivus</i>	Onsol	Herpes, Dermatitis, Wounds, Abscess, Rhumatic, Hair-fall, Arthritis, Vitiligo
<i>Ballota pseudodictamnus</i>	Mayla	Gastritis, Hair parasite, Urinary tract infection, Colitis
<i>Borago officinals</i>	Harsha	Cough, Bronchitis, Eczema, Tranquilizing for nerves, Respiratory diseases
<i>Calicotome villosa</i>	Gandol	Piles, Fistula, Epigastritis
<i>Capparis spinosa</i>	Kabbar	Anticancer, Diuretic, Wounds, Diabetes, Gastritis, Corn, Rheumatic
<i>Caralluma europaea</i>	Adghamus	Diabetes, Hair-fall
<i>Ceratonia siliqua</i>	Kharroub	Acidity, Indigestion, Constipation, Diuretic, Laxative, Sperm stimulant, Sterility
<i>Chenopodium murale</i>	Effena	Fever, Flatulence, Vermicide
<i>Cichorium endivia</i>	Shikoria	Jaundice, Liver diseases, Liver stimulant, Gall bladder stones, Cholagogue
<i>Cichorium spinosum</i>	Lihyat El-Sheikh	Dandruff
<i>Cistus parviflorus</i>	Birbish Ahmer	Urinary tract infection, Epigastric, Gastritis, Widening of intestines
<i>Cistus salvifolius</i>	Birbish Abid	Gastritis, Epigastric, Eczema, Vermicide
<i>Conium maculatum</i>	Shawkaran	Gout
<i>Convolvulus arvensis</i>	Olleiq	Varicose veins, Angina, Gingivitis, Dermatitis, Cough, Rheumatic, Renal stones
<i>Cupressus sempervirens</i>	Srow - Qiliz	Asthma, Respiration straits, Piles, Nervous seizure, Gingivitis, Toothache
<i>Cuscuta planiflora</i>	Hariet El-Zaatar	Constipation
<i>Cyclamen rohlfsianum</i>	Rakaf	Diabetes, Anaemia, Abscess
<i>Cynara cyrenaica</i>	Qahmoul	Anaemia, Ucler, Gastritis, Colic, Arteriosclerosis, Burns, Metritis, Ovulation
<i>Cynodon dactylon</i>	Negeila	Gastritis, Ulcer, Urinary tract infection, Hypertension, Fever, Prostatitis
<i>Datura innoxia</i>	Fadda	Asthma, Respiration straits, Hemostatic
<i>Deverra tortuosa</i>	Qazzah	Hypertension, Constipation, Bites
<i>Ecballium elaterium</i>	Buzzate	Jaundice, Liver diseases, Hair stimulant, Cancer, Piles, Acne.
<i>Ephedera alata</i>	Alendi	Asthma, Influenza, Chest allegry, Expectorant
<i>Euphorbia paralias</i>	Libbeina	Rheumatic, Herpes, Dermatitis
<i>Fagonia cretica</i>	Taleha	Jaundice
<i>Fumaria judaica</i>	Sfinari El-Hamer	Urinary retention, Sclerosing
<i>Glaucium flavum</i>	Qarn El-Jedyan	Menstrual problems
<i>Glebionis coronaria</i>	Oqhowan	Hypertension, Vermicide, Renal stones, Urinary tract infection
<i>Globularia alypum</i>	Zerreiga	Diuretic, Gastritis, Hypertension, Metritis, Ovary stimulant, Stroke, Vaginal diseases, Diarrahea, Ulcer, Colic, Eczema, Psoriasis, Dermatitis, Vaginitis, Hemostatic, Delayed menses, Abortion
<i>Helichrysum stoechas</i>	Eshbet Larnab	Renal stones, Urinary tract infection, Ureterolith, Jaundice, Renal colic, Gastritis
<i>Juniperus phoenicea</i>	Shaara - Arar	Gastritis, Oxytotic, Vermicide, Cystitis, Ulcer, Flatulence, Colic, Varicose veins, Colitis
<i>Laurus nobilis</i>	Ghar - Rand	Rheumatic, Indigestion
<i>Lavandula multifida</i>	Khozama	Diuretic, Menstruation, Antinsect, Colic, Dysmenorrhaea, Varicose veins
<i>Lobularia libyca</i>	Awent El-Hanesh	Herpes
<i>Lolium rigidum</i>	Sammah	Varicose veins
<i>Lonicera etrusca</i>	Jummet Fata	Anticancer
<i>Lotus tetragonolobus</i>	Garambush	Gastritis, Colitis
<i>Lycium europaeum</i>	Awsaj	Rheumatic, Constipation, Wounds, Dermatitis
<i>Malva aegyptia</i>	Khobbeiza	Anemia, Gastroenteritis, Gingivitis, Renal stones, Hair-fall, Angina, Laryngitis, Abscess
<i>Marrubium vulgare</i>	Roubiya	Diabetes, Cough, Blood purification, Arthritis, Rheumatic, Common cold, Anticancer, Dermatitis
<i>Matricaria aurea</i>	Qomialah	Gastritis, Menstruation, Colic, Expectorant, Dermatitis, Indigestion, Urinary tract infection, Laryngitis, Sinusitis, Diuretic, Flatulence, Urinary retention, Cracks of feet and hands, Asthma
<i>Matthiola fruticulosa</i>	Shaqara	Renal stones, Piles
<i>Melilotus indicus</i>	Qort	Urinary retention, Piles, Arteriosclerosis, Rhumatic
<i>Myrtus communis</i>	Mersin.	Diabetes, Gingivitis, Rheumatic, Common cold, Acne, Liver diseases, Ozostomia, Respiratory inflammation, Gastritis, Vaginitis

Table 2: Continued

<i>Narcissus tazetta</i>	Nargis	Menstruation
<i>Nerium oleander</i>	Defla	Psoriasis, Eczema, Abscess, Dermatitis, Psoriasis, Acne
<i>Nicotiana glauca</i>	Akkuz Musa	Hemostaic, Abscess
<i>Olea europaea</i>	Zaitoun	Gingivitis, Dyspepsia, Eczema, Constipation, Earache
<i>Onopordum cyrenaicum</i>	Shouk El-Gamal	Hepatitis, Anticancer, Epigastritis
<i>Oxalis pes-caprae</i>	Hommeida	Gingivitis, Constipation, Jaundice, Stimulate bile secretion
<i>Pancreatium maritimum</i>	Nowar El-Klab	Gout
<i>Papaver rhoeas</i>	Bouqaroun	Nervous seizure, Insomnia, Tranquilizing for nerves
<i>Paronychia arabica</i>	Gefet Al-abd	Renal stones
<i>Periploca angustifolia</i>	Helaab	Anguish
<i>Phagnalon rupestre</i>	Taam El-Arnab	Renal stones, Urinary tract infection
<i>Phillyrea angustifolia</i>	Sakhab	Gingivitis, Hypertension
<i>Phlomis floccosa</i>	Zeheira	Metritis
<i>Pinus halepensis</i>	Senouber	Liver diseases, Respiratory diseases
<i>Pistachia lentiscus</i>	Battoum	Colic, Gastritis, Ulcer, Gingivitis, Psoriasis, Dermatitis, Rash, Piles, Colitis
<i>Plantago major</i>	Lisan El-Jadi	Abscess, Varicose veins
<i>Polygonum equisetiforme</i>	Qordaab	Rheumatic, Diabetes, Gastritis, Emetic, Wounds, Renal stones, Vomiting
<i>Posidonia oceanica</i>	Tibn El-Bahr	Colitis
<i>Quercus coccifera</i>	Ballout	Enuresis, Metritis, Gingivitis, Dermatitis, Diarrhea, Vaginal diseases, Cough, Hypertension
<i>Retama raetam</i>	Ratam	Diabetes, Sinusitis
<i>Rhamnus lycioides</i>	Sellouf	Vitiligo
<i>Rhus tripartita</i>	Gdari	Gastritis, Toothache, Ulcer, Hair-change, Piles, Eczema, Cracks of hands and feet, Cystitis
<i>Ricinus communis</i>	Kherwa	Chest allergy, Constipation, Colic, Common cold, Abscess, Headache, Rheumatic, Arthritis
<i>Rosmarinus officinalis</i>	Ikliil	Headache, Rheumatic, Flatulence, Loss of appetite, Womb and stomach tumors, Menstruation, Strengthen blood vessels, Liver diseases, Gallbladder stones, Menopause, Dizziness
<i>Rubus sanctus</i>	Tout Shouki	Gingivitis, Diarrhea, Colic
<i>Sacropoterium spinosum</i>	Shobroq	Piles, Gastritis
<i>Scrophularia canina</i>	Shagaret El-hesan	Sterility, Rheumatic
<i>Seriphidium herba-album</i>	Shih	Vermicide, Menstruation, Leucoderma, Flatulence, Gastritis, Renal stones, Urinary tract infection, Common cold, Consitipation, Antinsect, Eye diseases, Conjunctivitis, Vitiligo
<i>Smliax aspera</i>	Rough	Dermatitis, Blood purification
<i>Solanum nigrum</i>	Enab El-Deeb	Liver diseases, Diurrtic, Constipation, Dermatitis, Arthritis, Rhumatic, Hypertension
<i>Solanum sodomium</i>	Teffah El-Qoula	Dermatitis, Herpes, Acne
<i>Sonchus oleraceus</i>	Teffaf	Lacagogue, Diuretic, Vermicide, Liver diseases, Arteriosclerosis, Anaemia, Anticancer
<i>Spartium junceum</i>	Retema - Wazal	Laxative
<i>Teucrium polium</i>	Gaada	Diabetes, Gastritis, Thyroiditis, Anaemia, Common cold, Hypertension, Renal stones
<i>Thapsia garganica</i>	Derias	Arthritis, Herpes, Hair-fall, Hypertension, Rheumatic, Scabies
<i>Thymelaea hirsuta</i>	Mithnan	Hair-fall, Constipation, Vermicide, Warts, Herpes, Sterility, Dermatitis, Psoriasis
<i>Thymus capitatus</i>	Zaatar	Common cold, Cough, Flatulence, Dermatitis, Indigestion, Vermicide, Rheumatic, Influenza, Gastritis, Antiseptic, Breathless, Anticancer, Strengthen immune system, Pneumonia, Asthma, Expectorant, Diabetes
<i>Urginea maritima</i>	Faron	Vulnerary, Anticancer, Herpes, Wounds, Dermatitis, Eczema, Back pain, Rheumatic
<i>Urtica pilulifera</i>	Horreiq	Rheumatic, Diuretic, Anticancer, Anaemia, Piles, Commo cold, Arthritis, Blood purification, Hemostatic, Eczema, Urinary tract infection, Renal colic, Gastritis
<i>Viburnum tinus</i>	Memakh	Gastritis
<i>Withania somnifera</i>	Foul El-Kelab	Vimicide, Diuretic
<i>Ziziphus lotus</i>	Sidr -Nabq	Constipation, Hair parasites, Gastritis, Sciatica, Abscess, Piles, Hepatitis
<i>Zygophyllum album</i>	Balbal - Rotreit	Diabetes, Hypertension, Flatulence

The biological spectrum of the species according to Raunkiar'r classification is shown in Fig. 2. It shows the presence of 49.32% Therophytes, 28.49% Chamaephytes, 12.05 Cryptophytes, 9.59 % Phanerophytes, 0.55 Hemicryptophytes. The high ratio of annual plants

indicates that the dry period is very long in the study area (from April to September). The most notable observation of the floristic surveys carried out in the present study is that the highest species richness is recorded on ridges, especially on the northern slopes of

the ridge. The phanerophytes are mainly represented in study area by a relatively small number of evergreen trees and tall shrubs. These are represented by a relatively low number of species compared with the therophytes and chamaephytes. These trees and shrubs give the landscape of study area its special beauty, charm and its name.

Traditional Uses of the Plant Species: 94 species were found to be traditionally used for human health care (Table 2). The flora of study area has not only a higher percentage of endemics, but also possesses some interesting endemics such as: *Arbutus pavarii* which is used to produce a bitter honey called hanon. Some other species are of interesting potential ornamental value, including *Cyclamen rohlfsianum* and *Arum cyrenaicum*.

DISCUSSION

Floristically, Al-Jabal Al-Akhder is one of the richest of all the phytogeographical region of Libya. According to Qaiser and El-Gadi [2], the total number of species recorded in Libya was 1750 vascular plant species distributed in 744 genera and 118 plant families and 50% of this total are confined to the Al-Jabal Al-Akhder region [2]. Two species (*Retama monosperma* and *Sanguisorba minor*) have been collected for the first time from Wadi Alkuf and they considered new record for Libya. A botanical survey of Al-Jabal Al-Akhder region is required and it is hoped that it may reveal some more interesting species. Consequently the valley is fairly rich in endemic taxa. El-Darier and El-Mogaspi [13] revealed that the total number of endemic species surveyed in the region was 44 species, belonging to 28 families and 41 genera. The species were traditionally used for medicinal and non-medicinal purposes. About 84 endemic species are recorded in the Libyan flora, approximately 70 % of them are found in the Aljabal Akhder region (about 59 endemic species) [2]. Twenty nine endemic species were recorded in the study area. The concentration of the endemic species in study area may be due to its peculiar physiography and climate compared with most of the country. The highest diversity on ridges could be attributed to the fact that this region is receiving and/or collecting the highest amount of annual rainfall [14]. Additionally, Boulos [15] noted that the trees and shrubs occur in moist habitats, where the collected rain water is abundant.

It is bordered by the Mediterranean Sea on the north and west sides and by the desert in the south. These physiographic and climatic barriers have provided

excellent ecological refuge and contributed to the restriction of many endemic taxa [2, 16, 17]. From the present study there are 94 species, traditionally used for human health care. El-Mokasabi [18] mentioned that 188 species are used medicinally in the Al-Jabal Al-Akhder region. Study area has a high diversity of medicinal plants that remain to be poorly studied, more phytochemical pharmacological studies are necessary in order to test popular indications and to search for new pharmaceuticals. Additional studies are also necessary to identify possible links between the chemical composition of plants and its relation to habit and life strategy and to determine how human populations in Al-Jabal Al-Akhder select and use these plants. The region may be considered as one of the richest regions of medicinal and aromatic plants, which are used in folkloric medicine and in the spice business. Trading of medicinal and aromatic plants has become a source of income for the local community in the study area and distributed on the level of shops and local markets and whole sale business [19].

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