Appendix 1. Characteristics of the the recorded Saharo- Arabian endemics in the Egyptian flora, goods and services offered by them, therapeutic uses, used parts, traditional uses, chemical constituents and supporting references. Local distributions are coded as: S: south of Sinai, Di: Isthemic desret (Middle of Sinai), Da: The Arabian desert in the east of the Nile, O: Oases, R: Red sea, Nd: Nile delta, Nv: Nile valley, Dl: the Libyan desert west of the Nile and Nf: Nile faiyum. Habitats are coded as: RH: Rocky Habitats, SF: Sand Formations, Wa: Wadis, Ri: Ridges, AL: Arable Lands, WB: Water Bodies. Goods are abbreviated as: Gr: grazing, Me: medicinal, HF: Human Food, Fu: Fuel, Ti: Timber and OT: Other Uses. Ecosystem Services are coded as: WB: Wind Breaking, SS: Sand Stabilization, , Sh: Shading, EV: Esthetic Value, NF: nitrogen fixation and We: Weed.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Family | Scientific name | Local Name | Voucher /Accession No# | Local distribution | Habitat | Goods | Ecosystem services | Part used | Traditional uses | Therapeutic uses | Chemical constituents | References |
| Amaranthaceae | *Agathophora alopecuroides* var. *alopecuroides* (Delile) Fenzl ex Bunge | Alishieran | TAN796-804 | Di | RH, SF, Wa | Gr |  | Aerial parts | Liver complaints | Antidiabetic plant | Alkaloids, flavonoids, lignans, and iridoids | (Shaltout et al., 2010) (Amin et al., 2022) |
| *Agathophora alopecuroides* var*. papillosa* (Maire) Boulos |  | TAN796-804 | Di | RH, SF, Wa |  |  | Aerial parts | Liver complaints | Antidiabetic plant | Alkaloids, flavonoids, lignans, and iridoids | (Amin et al., 2022) |
| *Haloxylon negevensis* (Iljin & Zohary) L.Boulos |  | YALS001 | Di | RH, Wa | Ti, Gr | WB, Sh | Bulb |  | Antioxidant and antimicrobial activity, anti-inflammatory, anti-steatotic and hepatoprotective activities, anxiolytic, antipyretic, analgesic and diabetic, obesity, hyperlipemia and gout | Phenols (Caffeic acid, Chlorogenic acid, p-Hydroxybenzoic acid, p-Coumaric acid,and Syringic acid), flavonoids, tannins, saponins, terpenoids, steroids and cardiac glycosides | (Bailey & Danin, 1981) (Adawia et al., 2016) (Mohammed, 2020) (El-Khalafy, 2018) (Shaltout et al., 2018) |
| Amaryllidaceae | *Allium decaisnei* C.Presl | Thwm dwkyny |  | S | RH, Ri | Me | SS |  |  |  |  | (Oran & Al-Eisawi, 2014) |
| *Allium rothii* Zucc. |  |  | Di | RH | OT | SS |  |  |  |  | (Kamenetsky, 1995) |
| *Allium sinaiticum* Boiss. | Althawm alsiynayiyu | YALS002 | Di, S | SF |  |  |  |  |  |  |  |
| Anacardiaceae | *Pistacia khinjuk* var. *microphylla* Boiss. | Albatm Al'akhdar | YALS003 | Da. Sept | RH | Me, OT | Sh, WB | Leaves, fruits, resins of the bark and Seeds | Tonic, aphrodisiac, antiseptic,antihypertensive and management of dental, gastrointestinal, liver, urinary tract and respiratory tract disorders | Antidiabetic, antitumor, anti-cholinesterase, antimicrobial and antifungal activity. | Lipids (oleic, linolenic, palmitic, behenic,lauric, myristic and arachidic acid) and Vitamins (tocopherols and tocotrienols) | (El-Khalafy, 2018) Shaltout et al., 2018; (Porwal et al., 2022) |
| Apiaceae | *Daucus sahariensis* Murb. | Juzur sahari |  | Di | SF, RH | Me, OT |  | Leaves and fruits | Antibacterial and antifungal properties of their essential oils (carrot oil) | Duretic, hypotensive, carminative, antilipemic and stomachic | Essential Oils (myristicin, α-pinene, cis-chrysanthenyl acetate, epi-α-bisabolol, limonene and cis-chrysanthenyl acetate | (Flamini et al., 2007) (Tavares et al., 2008) (Marzouki et al., 2010) |
| *Ducrosia ismaelis* Asch. | Alhiza |  | O | SF, AL | Me |  | Aerial parts | Skin infections and natural insecticides | Antibacterial, antifungal, anti-osteoporotic and antioxidant activities | Essential Oils (oxygenated monoterpenes, Decanal, α-pinene and dodecanal), glycosides, flavonoids, lignans, and phenolic compounds | (Morgan et al., 2014) El-Khalafy, 2018; Shaltout et al., 2018; (Mothana et al., 2020) (Mottaghipisheh et al., 2018) |
| *Pimpinella schweinfurthii* Asch. | Yansun |  | O | SF, AL |  |  |  |  |  |  |  |
| *Pycnocycla tomentosa* Decne. | Ghilijata-'um allaban | TAN4903- 4905 | S | RH | ME |  |  |  |  |  | (El-Khalafy, 2018) Shaltout et al., 2018; |
| Apocynaceae | *Gomphocarpus sinaicus* (Boiss.) Muschl. | Harjul Bariyun | TAN5462- 5468 | Di, Da sept, S | SF, RH | Me, HF, Gr, OT |  | Aerial parts | Treatment of some cancer and skin diseases | Antifungal activity | Ardiac glycosides (calotropin, calactin, and 5,6-dehydrocalotropin) and flavonoid glycosides | (Abdel-Azim, 1998) (Heneidak et al., 2006) (El-Seedi et al., 2013) (Baka, 2014) |
| Asparagaceae | *Bellevalia desertorum* Eig & Feinbrun | Bilfia | YALS006 | Di | RH, SF | ME |  |  |  |  |  | (El-Khalafy, 2018; Shaltout et al., 2018) |
| *Bellevalia flexuosa* var. *galalensis* Tackh. & Drar | Basilat Alghazal | CAIM 685 | Da, Da sept | RH, SF | Me, HF |  | Bulb |  | Antioxidant, anti-inflammatory, antimutagenic, antimicrobial, antiallergic and antihistaminic, anti-diabetic, cytotoxic, and anti-angiogenic effects | Homoisoflavonoids (7-O-methyl-8-demethoxy-3′-hydroxy-3,9-dihydropunctatin, 6-hydroxy-8-demethoxy-4′-O-methyl-3,9-dihydropunctatin, 7,4′-O-dimethyl-8-demethoxy-3,3′-dihydroxy-3,9-dihydropunctatin and 7-O-methyl-3-hyroxy-3,9-dihydropunctatin) | (Shaltout et al., 2023; El-Khalafy et al., 2023; (El-Elimat et al., 2018) |
| *Bellevalia zoharyi* Feinbrun | Alqueaysilan |  | Di | RH | ME |  |  |  |  |  | (El-Khalafy, 2018; Shaltout et al., 2018) |
| *Muscari longipes* subsp. *negevense* (Feinbrun & Danin) Hosni |  |  | Di | RH, AL | Me | WB | Bulb |  | Antimicrobial and antioxidant activities | Glycosides, saponins, Proteins &  Amino acids, Flavonoids and Carbohydrates | (Masum & Osw, 2016) |
| Asphodelaceae | *Asphodelus refractus* Boiss. | Bruq-Birwaq | YALS007 | Di, S | SF | Me |  | Aerial parts | Treatment of colds and hemorrhoids, a febrifuge, Anti-tumoral, diuretic , emmenagogue, rheumatic pain, Indigestion, constipation, wound of stomach, skin diseases and equilibrate the body. | Antimicrobial, analgesic and antioxidant activities | Phenolics (1,3,4-trihydroxy-8-methoxy-2-methyl anthraquinone- Refractlin, Chryseophanol, Luteolin, p- hydroxyphenethyl trans-ferulate and 7 hydroxy emodin) | (Abdelwahab & Ashour, 2018) |
| Asteraceae | *Anthemis scrobicularis* Yavin | Rbiaan 'Asfar |  | S | SF, Wa | Me | SS | Aerial parts |  | Anti-inflammatory, hepatoprotective activities, antifungal antioxidant, antitumour, antiplasmodial, anthelminthic, schistosomicidal, cytotoxic, phytotoxic and analgesic activities | Essential oils (β-eudesmol, oxygenated sesquiterpenes and oxygenated monoterpenes) | (Yusufoglu et al., 2014; Yusufoglu et al., 2018) |
| *Anvillea garcinii* Anderb. | Alnaqd | YALS008 | DI, S | SF, RH, Wa | Me,Gr | Sh | Leaves | Treatment of cold, Intestinal troubles, lung and liver diseases | Antiulcer, anticancer, antimicrobial and anti-inflammatory potential | Essential oils ( (guaiane sesquiterpene lactones, germacranolides), flavanoids and their glycosides | (Perveen et al., 2019; Perveen et al., 2018) |
| *Atractylis boulosii* Tackh. | Shawk aljuml | YALS009 | Di | SF | ME | SS |  |  |  |  | (El-Khalafy, 2018; Shaltout et al., 2018) |
| *Atractylis mernephthae* Asch. | Khashra | TAN6738-6742 | Di, Da sept | SF, wa |  |  |  |  |  |  |  |
| *Centaurea scoparia*  Sieber ex Spreng | Qantaryun | ALKH023 | Da, R, S | RH, Wa | Me | SS | Aerial parts | Treatment of cancer, microbial infections and as stimulant, tonic, antidiabetic, diuretic, and antirheumatic | Anti-microbial, anti-proliferative, antidiabetic, diuretic and antirheumatic | flavonoids,phenolics and Terpenoids (sesquiterpenes lactones) | (Kamel et al., 2023) |
| *Centaurea sinaica* DC. | Almuraar | YALS011 | Di, S | RH, Wa | Me |  | Aerial parts | Cytostatic, diuretic, antifebrile, antimalarial, astringent, phytotoxic, antineoplastic, aller-genic, stomachic, bitter tonic and digestive | Antinociceptive and antipyretic activities | Terpenoids (Amberboin, chlorohyssopifolin A, sinaicin, chlorojanerin, janerin, caryophyllene derivative, heptadeca-1-ene, lupeol, ẞ-si- tosterol and stigmasterol) | (Al-Easa et al., 1992) |
| *Chiliadenus montanus*  (Vahl) Brullo | Katilat jabalia | YALS012 | Di, Da sept, S | RH, Wa | Gr, Me | EV, Sh | Aerial parts | Treatment of reat renal troubles, diarrhea, stomachaches, and chest diseases | Anticancer, antioxidant, anticholestatic, and Antimicrobial activities, antiatherogenic and anti-diabetic efficiency | Monoterpenes, sesquiterpenes, diterpenes, triterpenes, sterols, and flavonoids | (Soliman et al., 2009; Hegazy et al., 2017) |
| *Crepis nigricans* Viv. | Saraghat samra |  | Nd | AL | HF, Me | We | Roots and aerial parts | Digestive, treatment of diabetes, and for joint diseases. | Antimicrobial, antioxidant, antidiabetic, antitumor, antiviral, antiulcer, phytotoxic, and nutritional properties | Essential oils, sesquiterpenes and flavonoids | (Badalamenti et al., 2022) |
| *Echinops glaberrimus* DC. | Alkharshaf-alqanfadhiu | CAIM4010 | Da sept, S | RH, Wa | Me, Gr |  | Whole plant | Gastrointestinal disorders, diuretic, hypoglycemiant, stomachic, liver disorders, post-partum care , kidney stones, diabetes, Eczema, skin burn and skin infection | Hepatoprotective, anti-inflammatory, antifungal, antifeedant,nematocidal, and cytotoxic activities | Thiophenes, quinoline alkaloids,sesquiterpenes (hydrocarbons and lactones), triterpenes,flavonoids, lignans, and volatile oils | (Bitew & Hymete, 2019) |
| *Iphiona mucronata* (Forssk.) Asch. & Schweinf. |  | YALS013 | Di, Da sept, S | RH, Wa | Me | Sh | Aerial parts | Treating fever and diuresis | Antineoplastic activity | Terrpenoides (sesquiterpenes), flavonoids, and phenolic acids | (Seca et al., 2014; Pecio et al., 2022) |
| *Launaea spinosa* (Forssk.) Sch. Bip. Ex Kuntze |  | YALS014 | Da sept, R, S | Wa, RH | Me, Gr | EV, Sh | Aerial parts | Treatment of wounds and liver oxidative stress | Anti-inflammatory, antiangiogenic, antioxidant and antibacterial activities | Sesquiterpenoid, flavonoid, carbohydrates and phenolic compounds | (Asif et al., 2020;  (Carvalho et al., 2018) |
| *Phagnalon sinaicum* Bornm. & Kneuck. |  | ALKH024 | S | RH | Me, HF, Gr |  | Aerial parts |  | Antimicrobial, cytotoxic, and antioxidant properties | Terpenoids (monoterpenes), artemisia ketone, α-thujone and santolin alcohol | (El-Khalafy, 2018; Shaltout et al., 2018; Badalamenti et al., 2023) |
| *Picris sulphurea* Delile |  |  | Nd, Nv, O, D, S | SF,Wa, AL | GR |  |  |  |  |  | (El-Khalafy, 2018; Shaltout et al., 2018) |
| *Scorzonera drarii* Tackh. | Salafi |  | Di | AL, Wa | ME, HF |  |  |  |  |  | (El-Khalafy, 2018; Shaltout et al., 2018) |
| *Scorzonera schweinfurthii* Boiss. | Alsalsafiu | YALS016 | Da. sept(Galala), S | RH | HF |  |  |  |  |  | (Takruri et al., 2008) |
| *Senecio belbeysius* Delile | Alshaykha | CAIM 041 | Nd, Nv | WB, AL | Gr, HF |  |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023; Kamel et al., 2023) |
| *Tanacetum sinaicum* (Fresen.) Delile ex K.Bremer & Humphries |  | YALS017 | S | RH | Me, HF, OT |  | Aerial parts | Intreating high body temperature, treating stomach problems, treating pneumonia, and treating osteoarthritis | Antiviral and antinociceptive, antiulcer, antioxidant and anti-inflammatory activities | Alkaloids, anthraquinones, carbohydrates, cardiac glycosides, flavonoids, glycosides, resin, saponin, tannins, terpenoids and phenolics | (Haggag & Elhaw, 2022; Evans, 2002) |
| Boraginaceae | *Arnebia tinctoria* (Forssk. | Atan-Fahanat |  | Di, Da. sept, S | SF, RH | Gr, OT |  |  |  |  |  | (Middleditch, 2012) |
| *Podonosma galalensis* Schweinf. Ex Boiss. |  | CAIM 229 | Da. Sept (Galala) | RH |  |  |  |  |  |  | (El-Khalafy, 2018; Shaltout et al., 2018) |
| Brassicaceae | *Crucihimalaya kneuckeri* (Bornm.) Al-Shehbaz, O'Kane & R.A.Price |  |  | S | RH |  |  |  |  |  |  |  |
| *Eremobium aegyptiacum* var. *Lineare* (Delile) Zohary | Alsilislat-Algharayra | YALS018 | S | SF | Me |  | Leaves | Treatment of old wounds, laxative and diuretic | Anti-Alzheimer and antioxidant activities | Phenolic acids and flavonoids | (Marzouk et al., 2020; Mohan et al., 2019) |
| *Matthiola arabica* Boiss. | Manthor | YALS019 | S | RH,Wa | Me, HF, Gr |  | Aerial parts | Treatment of Anemia | Anti-fibrotic, antioxidant, hepatoprotective and anti-inflammatory activities | Glucosinolates (ethyl glucosinolate, gluconapin, glucodehydroerucin, glucoerucin and glucoraphanin) | (Mohammed et al., 2017;  (Abdel-Kader et al., 2018) |
| *Pseuderucaria teretifolia* (Desf.) O. E. Schulz |  | YALS020 | DI | Wa | Gr |  |  |  |  |  | (Ahmed et al., 2023) |
| *Schimpera arabica* Hochst. & Steud. | Safraa - Saghira |  | Di, Da sept., S | SF, Wa | HF, Gr, Me |  | Whole plant | Cardiac stimulation | Antioxidant and antimicrobial activities, Cardiac stimulation | Terpenoids (2-Hexadecen-1-ol and beta sitosterol), Essential oils (palmitic acid, linolenic acid, tetradecanoic acid and undecanoic acid, polyphenols and flavonoids | (El-Shabasy, 2016; Hidayathulla et al., 2018) |
| Campanulaceae | *Campanula dulcis* Decne. |  |  | S | RH |  |  |  |  |  |  |  |
| Caprifoliaceae | *Pterocephalus arabicus* Boiss. | Euqs | TAN6362 - 6363 | Di | RH | Gr |  |  |  |  |  | (El-Khalafy, 2018; Shaltout et al., 2018) |
| *Pterocephalus sanctus* Decne. | Euqs | TAN6022- 6043 | S | RH | Gr, Me |  | Whole plant | Anti-inflammatory, analgesic, antihepatotoxic, antioxidant, antibacterial, spasmolytic, hemostatic, and astringent properties. | Antihepatoxic and anti-bacterial activities | Flavenoids, giycosides (sweroside) and terpenes (loganin) | (Ahmed & Shahat, 2006; El-Hela et al., 2020) |
| Caryophyllaceae | *Bufonia multiceps* Decne. |  | ELKH001 | S | RH | Gr, Me |  |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| *Dianthus guessfeldtianus* Muschl. | Quranful Shayie |  | Da. Sept | RH | OT |  |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| *Dianthus monadelphus* subsp. *judaicus* (Boiss.) |  |  | Di | RH |  |  |  |  |  |  |  |
| *Dianthus sinaicus* Boiss. | Quranful | YALS024 | Di, S | RH, Wa | Gr |  |  |  |  |  |  |
| *Eremogone sinaica* (Boiss.) Dillenb. & Kadereit |  |  | Da sept. , S | SF, Wa | Gr |  |  |  |  |  |  |
| *Paronychia sinaica* Fresen. |  | YALS023 | Di, Da sept., S | Wa, RH |  |  |  |  |  |  |  |
| *Petrorhagia arabica* (Boiss.) P. W. Ball & Heywood | Alziqia |  | Di, S | Wa |  |  |  |  |  |  |  |
| *Silene arabica* Boiss. | Abu duhinat Allasiq | YALS024 | R, S | Wa, SF |  |  |  |  |  |  |  |
| *Silene hussonii* Boiss. | Alsiylinat alhamra |  | Di, S | Wa |  |  |  |  |  |  |  |
| *Silene leucophylla* Boiss. |  | ALKH002 | S | RH | Gr, Me |  |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| *Silene linearis* Decne. | Alsiyliniat alkhatia | CAIM 3704 | Di, Da, R, S | Wa, SF, RH |  |  |  |  |  |  |  |
| *Silene odontopetala* var. *congesta* Boiss. |  |  | S | RH | Me |  | Whole plant |  | Antioxidant | Oleanane-type glycosides and saponin | (Ün et al., 2020) |
| *Silene oreosinaica* Chowdhuri | Alsiylin- Allasiq | ALKH003 | S | RH | Gr |  |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| *Silene schimperiana* Boiss. | Alsiylinat -Aldabiqat | ALKH004 | S | RH | Gr, ME |  |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| *Silene villosa* var. *graveolens* Sickenb. | Alzughbiat- Turbat | YALS025 | O | Wa, SF | Me, OT |  | Whole plant |  | Immunemodulation, antioxidant anti-inflammatory and hepatoprotective effects | Phenolic contents | (Shaltout et al., 2023; El-Khalafy et al., 2023; Foudah, 2017; (Yusufoglu et al., 2018a) |
| *Silene vivianii* subsp. *viscida* (Boiss.) Boulos |  |  | Di, S | Wa |  | We |  |  |  |  |  |
| Cistaceae | *Helianthemum sancti-antoni*  Schweinf. Ex Boiss. | Alraqruq |  | Da sept, S | RH |  |  |  |  |  |  |  |
| *Helianthemum schweinfurthii* Grosser | Khshin-Raal | YALS026 | Da sept | RH | OT |  |  |  |  |  |  |
| *Helianthemum ventosum* Boiss. | Zahrat Alshams |  | Di, Da sept, S | RH |  |  |  |  |  |  |  |
| Colchicaceae | *Colchicum guessfeldtianum*  Asch. & Schweinf. |  |  | Da sept, S | RH |  |  |  |  |  |  |  |
| Convolvulaceae | *Convolvulus schimperi* Boiss. |  |  | Di, S | Wa | Gr |  |  |  |  |  |  |
|  | *Convolvulus spicatus* Hallier f. |  |  | S | Wa | Me |  | Aerial parts | Fever, loss of memory, insomnia, heart disease, and hair growth | Anti-cancer and antioxidant | Phenolics,Flavonoids, tannins, glycosides, sterols, coumarins, saponin and alkaloids | (Mishra & Sethiya, 2010; Mobasher, 2021) |
| Ephedraceae | *Ephedra pachyclada* subsp. *sinaica* (Riedl) Freitag & Maier-St | Ealandat - Ealandiun | YALS025 | S | RH, Wa | Me | Sh | Aerial parts | Relieve peptic ulcers and stomachache | Antioxidant, anti-inflammatory and antimicrobial activities | Alkaloids, flavonoids, tannins, polysaccharides, and organic phenolic acids. | (Sharififar et al., 2010; Dosari et al., 2016) |
| Euphorbiaceae | *Euphorbia obovata Decne.* |  | ALKH025 | S | RH | Gr |  |  |  |  |  |  |
| Fabaceae | *Argyrolobium saharae* Pomel |  |  | O (uweinat)) | RH, SF, Wa |  | Sh |  |  |  |  |  |
| *Astragalus amalecitanus* Boiss. | Qitadu-Qufaea |  | Di | RH, Wa | Gr | SS, NF |  |  |  |  |  |
| *Astragalus dactylocarpus* subsp. *acinaciferus* (Boiss.) E. Ott |  |  | Di, S | RH, SF, Wa | Gr | SS, NF |  |  |  |  |  |
| *Astragalus fresenii* Decne |  |  | S | RH, Wa | Me | SS, NF |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| *Astragalus intercedens* Sam. | Alqatad |  | Di | Wa |  |  |  |  |  |  |  |
| *Astragalus sanctus* Boiss. | Alqatad Alshawkiu |  | Di | RH, Wa | Me | SS, NF |  |  |  |  |  |
| *Astragalus schimperi* Boiss. | Alqatad Alshambiriu | YALS029 | Da. Sept, S | SF, Wa | Gr | NF |  |  |  |  |  |
| *Astragalus sparsus* Decne | Alqatad almutanathir | YALS030 | Di,S | RH, Wa | Me | SS, NF |  |  |  |  |  |
| *Lotus lanuginosus* Vent. | Rajul Aleusfur |  | Di | RH, Wa | Me | SS, NF | Aerial parts |  | Antioxidant activity | Cyanogenic glycoside (Lotaustralin, kaempferol-7-O-α-L-rhamnopyranoside , kaempferol-3-O-apiofuranosyl-7O-rhamnopyranosyl, isorhamnetin-3-O-rutinoside , and kaempferol-3O-(2’’-β-D-xylopyranosyl)-α-L-rhamnopyranoside-7-O-α-L-rhamnopyranoside), polyphenols and flavenoids | (Oueslati et al., 2020a) |
| *Melilotus serratifolius* Tackh. & Boulos | Hundiquq |  | O (Dakhla) | WB, AL | HF, Me | SS, NF, We |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| *Tephrosia kassasii* Boulos | Hanayt |  | Nv | WB | Me | SS, NF |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| *Trigonella media* Delile | Alhulba |  | Nd (Cairo) | RH, AL | Me | SS, NF |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| *Trigonella schlumbergeri* Boiss. | Alhulba |  | S | RH, SF | Me | SS, NF |  |  |  |  |  |
| Gentianaceae | *Centaurium malzacianum* Maire |  |  | S | WB |  |  |  |  |  |  |  |
| Hypericaceae | *Hypericum sinaicum* Hochst. ex Boiss. |  | ALKH005 | S | RH | Me |  | Aerial parts | Treatment of nausea, stomach ache, boils, and headache | Anti-inflammatory and antioxidant activities | Phenolics and Flavenoids | (Yuk et al., 2017; El-Hawary et al., 2022) |
| Lamiaceae | *Ballota kaiseri* Tackh. |  | ALKH006 | S | Ri, Wa | Me, HF, OT, Gr |  | Aerial parts | Treatment of nausea, vomiting, nervous dyspepsia, wounds, and upper respiratory inflammation | Antimicrobial, antioxidant | Essential oils, Carbohydrates, Tannins, Saponin, Flavonoids, Alkaloids, Terpenoids, Glycosides, Phenols, Coumarins, Acids and Proteins | (Shaltout et al., 2023; El-Khalafy et al., 2023; Morteza-Semnani & Ghanbarimasir, 2019;  (Abdel-Raouf et al., 2022) |
| *Lavandula atriplicifolia*  Benth. | Khizami | YALS031 | Da. Mer | Wa, RH | Me, OT |  | Aerial parts | An antispasmodic in colic pain and for various diseases of the central nervous system | Antiseptic, antiinflammatory, and analgesic properties, antioxidant activity , antimicrobial and antifungal activities | Terpenes, polyphenols and coumarins and Essential oils | (Ez Zoubi et al., 2020)  (Oueslati et al., 2020b) |
| *Micromeria serbaliana* (Danin & Hedge) | Alshumaysa | ALKH007 | S | RH | Gr, Me |  |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| *Micromeria sinaica* (Benth.) Briq. | Almikrwmry | ALKH008 | Di, Da. Mer, S | RH | Gr, Me |  | Aerial parts | Used as herbal tea and substituted for mint, remedies against colds, heart disorders, chest pains, headache, stomachache, skin infections, inflamed eyes, kidney stone, and topical anesthetic in toothache and wounds | Antimicrobial | Terpenes and Essential oils | (El-Khalafy, 2018; Shaltout et al., 2018;  (El-Hawary et al., 1991)  (Çarıkçı, 2013) |
| *Nepeta septemcrenata* Benth. | Qatrum-Naenae | ALKH009 | S | RH, Wa | Me, Gr |  | Aerial parts | Antipyretic, sedative, cardiotonic, eye wash also as a gargle for pharyngitis,,against snake and scorpion bites, gum disease and liver and kidney diseases | Antispasmodic, expectorant, diuretic, antiseptic, antitussive, antiasthmatic, Antioxidant and febrifuge activities [ | Carbohydrates (polysaccharides), Terpenes, Flavenoids, Essential oils and steroids | (Sharma et al., 2019)  (Sharma et al., 2021) |
| *Origanum isthmicum* Danin |  |  | Di( Gabal Helal) | RH | HF, ME |  |  |  |  |  | (El-Khalafy, 2018; Shaltout et al., 2018) |
| *Origanum syriacum* subsp. *sinaicum* (Boiss.) Greuter & Burdet |  | ALKH010 | Di, Da sept, S | RH | Me, HF, Gr |  | Aerial parts | Treating colds, diarrhea, indigestion, inflammation and toothache | Antioxidant, antimicrobial, and antiparasitic capacities, anti-inflammatory, neuroprotective,  and antihelminthic activities | Terpenoids, volatile oils, phenolic compounds, flavonoids and carotenoids | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| *Phlomis aurea* Decne. | Adhinat Dhahabia | ALKH011 | S | Wa | Me, HF, Gr |  | Whole plant | Treating diabetes, gastric ulcer, hemorrhoids, inflammation and wounds, gastrointestinal troubles, protection of the liver, kidneys, bones and cardiovascular systems. | Antioxidant, Antimicrobial | Lignans,flavonoids, iridoids and phenylethanoid glycosides and Essential oils, | (Torky et al., 2021) |
| *Salvia deserti* Decne. | Myrymya | YALS032 | Di, Da sept, S | RH, Wa | Me |  | Aerial parts | Treating cold, cough, flu, stomach ache, tuberculosis, chronic bronchitis and bacterial infections | Anti-inflammatory, anti-allergic, antioxidant activities | Terpenes, phenolics and flavenoids | (Al Jaber, 2017) |
| *Stachys aegyptiaca* Pers. | Albutnij | YALS033 | Di, Da sept, S | RH, Wa | Me, Gr |  | Aerial parts | Treatment of stress, skin inflammations, Gastrointestinal disorders, asthma and genital tumors | Anti-inflammatory, antioxidant, analgesic, renoprotective, anxiolytic and antidepressant activity | Neo-clerodane diterpenoids (stachaegyptins A-C, stachaegyptins D-E) | (Tomou et al., 2020) |
| *Teucrium decaisnei* C. Presl |  | ALKH012 | Da. Sept | RH, Wa | Me, Gr |  | Aerial parts | Antidiabetic agent, gastrointestinal disorders, inflammations, diabetes and rheumatism, an antibacterial, antiulcer, hypotensive, antispasmodic, anorexigenic and antipyretic agent | Antioxidant, anticancer, antiinflammatory, hypoglycemic, hepatoprotective, hypolipidemic, antibacterial, and antifungal activities. | Terpenes, terpenoids, and flavonoids | (Bahramikia et al., 2022) |
| *Teucrium leucocladum* Boiss. |  | TAN6135- 6151 | Da sept, S | Wa | Me |  | Aerial parts | Treatment of hyperglycemia and colon spasms | Antihyperglycemic and antihyperlipidemic and antioxidant activities | Terpenoids, flavonoids, and iridoids | (Piozzi et al., 2005) (Bassalat et al., 2020) |
| *Thymus bovei* Benth. | Zaetar | ALKH013 | Di, Da sept | Wa | Me |  | Aerial parts | Anthelmintic, expectorant, antispasmodic, antiseptic, treatment of injuries, upper respiratory system inflammations and anorexia | Antioxidant, antimicrobial, and anthelmintic activities. | Essential oils (Trans-geraniol (35.38 %), α-citral (20.37 %) and β-citral (14.76 %) | (Batanouny, 1999)  El-Khalafy, 2018; Shaltout et al., 2018;  (Jaradat et al., 2016) |
| *Thymus decussatus* Benth. | Zaetar | ALKH014 | Di, S | Wa, RH | Me, Gr |  | Aerial parts | Treating headache, ulcers, eczema, renal diseases, asthenia, wounds, verrucae, diabetes and ausea | Antimicrobial and cytotoxicity activities | Monoterpenes (carvacrol and p-cymene) | (Saleh et al., 2020)  (Li et al., 2019) |
| Molluginaceae | *Glinus runkewitzii* Tackh. & Boulos |  |  | Nv | WB | Me |  |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| Plantaginaceae | *Anarrhinum forskaohlii* subsp. *pubescens* D.A.Sutton | Easbalah | ALKH015 | S | RH | Me, Gr |  | Aerial parts | Relieving pain | Developing anticancer and Alzheimer disease relieving drugs, antimicrobial activities | Iridoid glucosides, alkaloids, amino acids, carbohydrates, organic acids, vitamins, and a phenol. | (Shaltout et al., 2023; El-Khalafy et al., 2023;  (Mahran et al., 2020)  (Abdelsalam et al., 2021) |
| *Plantago sinaica* (Barneoud) Decne. | Zahrat Alhaw | YALS016 | S | RH, Wa | Gr, ME |  |  |  |  |  | (El-Khalafy, 2018; Shaltout et al., 2018) |
| *Veronica kaiseri* Tackh. | Alsabt | ALKH019 | S | SF | Gr |  |  |  |  |  |  |
| Poaceae | *Stipagrostis drarii* (Tackh.) de Winter |  |  | Di | RH, Ri, SF | Gr |  |  |  |  |  |  |
| Polygalaceae | *Polygala sinaica* var. *glabrescens* (Zohary) Boulos | Shaflah | ALKH017 | S | RH, Wa | Me |  |  |  |  |  |  |
| *Polygala sinaica* var. *sinaica* Botsch. | Qarzah Shawki | ALKH018 | S | RH | Me, GR |  |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| Polygonaceae | *Atraphaxis spinosa* var. *sinaica* (Jaub. & Spach) Boiss. |  |  | Da. Sept, S | RH, Wa | HF, Me |  | Aerial parts | Purgative, laxative, cough,  sedative for heart, liver and  stomach tonic, emollient for  throat and ches | Antioxidant | Phenolics, Flavenoids and flavonoid glycosides | (Wang et al., 2018)  (Amirahmadi et al., 2022) |
| *Persicaria obtusifolia*  (Täckh. & Boulos) Greuter & Burdet |  |  | Nf | AL | Me |  |  |  |  |  |  |
| Primulaceae | *Primula boveana* Duby |  | ALKH020 | S | RH,AL | Me, Gr |  |  |  |  |  |  |
| Resedaceae | *Reseda muricata* C. Presl | Khudrat musafira | YALS033 | Da. Sept, S | SF, RH, Wa | Me |  | Leaves | Treatment of hemorrhoids, stomach aches, and diarrhea | Antifungal, antibacterial, and anti-inflammatory activities | Flavonoid trioside, flavonoids, alkaloids, tannins, saponins and phenolic acids | (El-Sayed et al., 2001) |
| *Reseda stenostachya* Boiss. | Albilayha |  | S | Wa | Me |  | Whole plant | diuretic, laxative and tonic | Antimicrobial, anti-inflammatory, insecticidal, antiproliferative, neuroprotective and antioxidant effects | Alkaloids, flavonoids, saponins, anthocyanin, glucosides and tannins | (Moghanloo et al., 2019)  (Al-Snafi, 2022) |
| Rhamnaceae | *Rhamnus disperma* Boiss. |  | ALKH026 | Da sept. , S | RH | Me | Sh | Roots | Treating diseases such as cancer, wound, jaundice, hepatitis, gonorrhea, laxative, hypertension, malaria, stomach ache, snake bite and diarrhea. | Antioxidant | Kampferol 3, 7-di-O-α-L-rhamnopyranoside [3] and quercetin 3, 4'-di-O-α-L-rhamnopyranoside) and Phenolics | (Mohammed, 2015)  (Nigussie et al., 2021) |
| Rosaceae | *Cotoneaster orbicularis* Schltdl. |  | YALS035 | S | RH | Me | Sh | Roots and aerial parts | laxative, aperient, styptic, and expectorant | Antioxidant | Flavonoids and glycosides | (Ali et al., 2021) |
| *Rosa arabica* (Crép. ex Boiss.) Déségl. |  | ALKH021 | S | RH | Me, Fu | Sh |  |  |  |  | (Shaltout et al., 2023; El-Khalafy et al., 2023) |
| Rubiaceae | *Crucianella ciliata* Lam. |  | YALS036 | S | RH, SF | Gr |  |  |  |  |  |  |
| *Galium sinaicum* (Delile ex Decne) Boiss. |  |  | Da sept., S | RH | Me |  | Roots and aerial parts | Herbal tea to sustain hyperglycaemia in diabetic patients | Antioxidant, antiinflammatory activities, antidiabetic controller | Anthraquinones, lignens flavonoids, iridoids, alkaloid, glycosides , cardiac glycosides, saponins, phytosterols, tannins and amino acids | (Fahmy, 2022) |
| Rutaceae | *Haplophyllum poorei* C.C.Towns. | Datiskia |  | S | RH |  |  |  |  |  |  | (El-Khalafy, 2018; Shaltout et al., 2018) |
| Scrophulariaceae | *Scrophularia deserti* Delile |  | YALS038 | Nd (Rosetta), Di, Da sept., S | Wa, AL | Me |  | Aerial parts | Internal infections, mastitis, skin ulcers and episiotomy, inflammation, burns, intestinal pain, eye and ear infections and hemorrhoidsantipyretic, a remedy for kidney diseases and for tumours and lung cancer | Antibacterial and antioxidant activities | Essential oils, phenolics and Glycosides | (Bahmani et al., 2014) |
| *Verbascum decaisneanum* Kuntze | Libaydat-Albusufayr | TANE 6501 | S | RH |  |  |  |  |  |  |  |
| *Verbascum fruticulosum* Post & Autran | Albusir |  | Di | Wa | Me |  | Leaves | Treatment of inflammation, bacteria, fungi, cancer, coughs, and spasms, tuberculosis, asthma, ear infection, itching, eczema, and sinusitis | Antimicrobial, anticoagulation and antioxidant activities | Phenol, flavonoids, and tannin | (El-Khalafy, 2018; Shaltout et al., 2018;  (Alkowni et al., 2023) |
| *Verbascum schimperianum* Boiss. | Binj | YALS037 | Di, S | RH, Wa |  |  |  |  |  |  |  |
| Solanaceae | *Hyoscyamus boveanus* (Dunal) Asch. & Schweinf. | Almalayh | ALKH023 | O(Uweinat), Da, R, S | SF, Wa | Me | SS | Whole plant | Treatment of stomach cramps, heavy coughs, asthma, neuralgia, and manic psychosis. | Antispasmodic, anticholinergic, Antimuscarenic, mydriatic and antimicrobial agent | Alkaloids (atropine and scopolamine) | (El–Dahmy et al., 2022) |
| Tamaricaceae | *Reaumuria negevensis* Zohary & Danin | Alhasak | YALS039 | Di | RH |  |  |  |  |  |  | (El-Khalafy, 2018; Shaltout et al., 2018) |
| Zygophyllaceae | *Tribulus kaiseri* Hosni |  |  | S | Wa |  |  |  |  |  |  |  |
| *Zygophyllum dumosum* Boiss. |  | YALS040 | Di, S | Wa | Gr |  |  |  |  |  | (El-Khalafy, 2018; Shaltout et al., 2018) |
| *Zygophyllum molle* (Delile) Christenh. & Byng | Ratarit | TAN3887- 3890 | Da sept., Di | RH, Wa | Gr, Me |  | Aerial parts | Remedy for fever, a tonic and febrifuge | Antioxidants and antimicrobial activities. | Tannins, saponins, phenolics, flavenoids, terpenoids and alkaloids | (Puri & Bhandari, 2014)  (Alghanem, 2018) |
| *Zygophyllum scabrum* (Forssk.) Christenh. & Byng | Ratarit | CAIM62598 | Da sept., Di, S | RH, Wa |  |  | Aerial parts | Antiinflammatory activity, analgesic and anti-pyretic effects, thrombolytic effects and antioxidant activity, treatment of various skin lesions, and digestive disorders | Antiinflammatory, analgesic, anti-pyretic and antioxidant activities | Triterpenoids ,saponins and flavenoids and glycosides | (Kasture et al., 2014)  (Boutaghane et al., 2016) |

Appendix 2: Example of the questionnaires of the goods and services of Saharo- Arabian endemic plants in Egypt

Name or number: Age: Region:

Specialist: Date

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Scientific name | Common name | Goods | | | | | | Services | | | | | |
| Grazing | Medicine | Human Food | Fuel | Timber | Other Uses | Wind Breaking | Sand Stabilization | Shading | Esthetic  Value | Nitrogen  Fixation | Weed |
| *Agathophora alopecuroides* var. *Alopecuroides* (Delile) Fenzl ex Bunge |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Agathophora alopecuroides* var*. Papillosa* (Maire) Boulos |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Haloxylon negevensis* (Iljin & Zohary) L.Boulos |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Allium decaisnei* C.Presl |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Allium rothii* Zucc. |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Allium sinaiticum* Boiss. |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Pistacia khinjuk* var. *microphylla* Boiss. |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Daucus sahariensis* Murb. |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Ducrosia ismaelis* Asch. |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Pimpinella schweinfurthii* Asch. |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Pycnocycla tomentosa* Decne. |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Gomphocarpus sinaicus* (Boiss.) Muschl. |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Bellevalia desertorum* Eig & Feinbrun |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Bellevalia flexuosa* var. *Galalensis* Tackh. & Drar |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Bellevalia zoharyi* Feinbrun |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Muscari longipes* subsp. *negevense* (Feinbrun & Danin) Hosni |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Asphodelus refractus* Boiss. |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Anthemis scrobicularis* Yavin |  |  |  |  |  |  |  |  |  |  |  |  |  |