

Agricultural and Weed Plants as the main Ethnobotanical Sources in the Jahrom County, Fars Province, Iran,

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ABSTRACT

Phytotherapy and the use of medicinal plants in Jahrom County have a long history. Many of the existing medicinal practices in this region are unique and can have special scientific value. In other words, based on the background of Iranian traditional medicine culture, which is clearly evident in this ancient region, as well as the ecological conditions of the region (for example, the fact that Jahrom is a special region in terms of agriculture and horticulture), the main medicinal and traditional uses of plants are related to fruit trees and weeds. The present study investigated the relationship between the dominant land use in this area, which is agriculture, and its traditional medicinal culture. A cross-sectional survey was conducted to collect ethnobotanical information using semi-structured questionnaires, field visits, and open interviews with 51 local informants. Plant species were deposited in the herbarium of the University of Jiroft and identified by botanists using standard taxonomic literature and methods. Statistical factors including use reports (UR) for each plant species, and informant consensus factor (ICF) were applied to analyze the ethnopharmacological data. Independent samples T test was used to compare use report between two main physiological forms of the plant's species. On the whole, 64 medicinal plant species were identified that applied for the treatment of 15 ailments categories by the locals of the Jahrom County. These recorded plant species belong to 58 genera of 33 botanical families. Lamiaceae, Asteraceae, and Apiaceae scored the main utilized plant families, respectively. The highly utilized plant species with the highest use report were *Phoenix dactylifera* (UR: 323), *Prunus scoparia* (UR: 176), *Cuscuta epithymum* (UR: 148), and *Tribulus terrestris* (UR=122). Dermatological, neurological, and gastrointestinal disorders were scored the highest ICF. Also, in unexpected results we found that female diseases recorded high level of informant consensus factor in this district. The most utilized plant part was leaf, followed by seed and flower. The most common of drug preparation and applications were decoction, poultice, and infusion respectively. The results of independent sample t-test showed that herb's use report was significantly more than trees and shrubs. Our findings indicate that Jahrom region has different traditional medicinal knowledge that is the result of cultural, ecological and therapeutic interactions over a long period of time, and if research steps are carried out, they have a good potential to obtain pharmaceutical products. In other words, we found not recorded applications of the fruit trees and under story herbs which could be valuable for the production of herbal natural products. In other words, we found not recorded ethnobotanical applications of the fruit trees and under story herbs which could define new economic values for these plant species.

Keyword: Ethnopharmacology, Medicinal plants, Culture, Jahrom County

INTRODUCTION

Fars province is the most famous archaeological site in Iran. European travelers have been visiting its historical districts and antiquities, such as Persepolis, Naqsh-e Rostam, and Pasargadae, since the 19th century. [1]. In this regard, Jahrom has been considered as one of the important cities of Fars province since ancient times. In some versions of Ferdowsi's Shahnameh, one of the most famous Persian poets, the name of Jahrom is repeated 8 times during the Parthian, Achaemenid, and Sasanian periods. However, in some versions of the Shahnameh, the name of Jahrom is mentioned up to 13-17 times. In other words, Jahrom is one of the oldest centers of human civilization in the south of Iran. This city was founded by Ardashir I, the fifth Achaemenid king. Jahrom was also an important region and residence center of the princes during the Sassanid period. [2] The tomb of Jamaseb Hakim, the son-in-law of the prophet Zoroaster, is also located in Jahrom city. It was registered in the list of national monuments of Iran in 1353 solar (1974 AD) with registration number 986. In the local culture of Jahrom, there are many signs of the connection of this city with epics and legends. For example, there are surnames related

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to legends and epics, such as Bahman son of Esfandiar (a legendary Iranian warrior). [2]. In fact, the construction of the city of Jahrom has been attributed to Bahman son of Esfandiar. [3, 4] Additionally, documents and antiquities show that Jahrom was inhabited in prehistoric and paleolithic times. [5]

Jahrom is located 185 kilometers southwest of Shiraz in a plain covered with palm and citrus gardens. It is known as "the largest garden in Iran" and produces more than one million tons of garden products per year, accounting for 1.2% of the world's dates and 6% of citrus fruits. Additionally, about 35% of all limes in Iran are produced in Jahrom. The natural landscape of this city is entirely mountainous and high. About one-fifth of the area of Jahrom city is plains, and the remaining four-fifths are highlands. These highlands are part of the Zagros fold belt, and the direction of most of the mountains follows the South Zagros Mountain Range and its branches, which surround the city. The average elevation of the city center is about 1,050 meters, its highest point is about 3,170 meters, and its lowest point is about 850 meters above sea level. [6]. The vegetation of this area is mostly composed of forest and garden trees with herbaceous species in their understory. In fact, Jahrom is an ancient region with a deep-rooted culture in history. It has an arid and warm climate and is covered by gardens with herbaceous plants in the understory in the plains, and bushes and trees in the rangelands. This study was conducted to investigate the significant relationship between the ancient culture and ecological conditions of this region, especially the land use of this region, which is agriculture, with the ethno-medicinal habits of the local communities of this county.

MATERIAL AND METHODS

Study Area

Jahrom County is a semi-arid region in Fars province with a population of 228,532 and an area of 3,926 square kilometers. It is located 185 kilometers from the provincial capital, Shiraz. The altitude of Jahrom County ranges from 850 to 3,170 meters above sea level. [7]. It is the largest and most populous city in the southern half of Fars province ($28^{\circ}49'73''N$, $53^{\circ}56'03''E$), the second largest city and the third most populous city in the whole province, and the eighth largest city in southern Iran. The average annual rainfall in Jahrom is about 285 millimeters, and the average annual relative humidity is 45.4%. Jahrom County is bordered by Larestan to the south, Shiraz to the north, Firuzabad to the west, and Fasa and Darab to the east. Agriculture is the main occupation of the residents in this region, and approximately 40% of the farmers are elderly with low levels of education. [8]. Jahrom County consists of four districts: Central, Simakan, Kordian, and Khafr. Persians are the main ethnic group in this region (about 99%), with a small Arab population. [6] (Fig. 1).

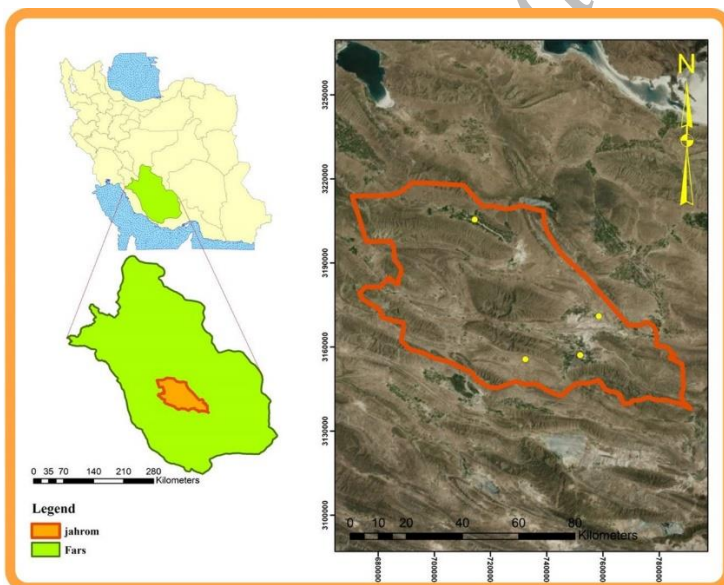


Fig. 1 Study area, Jahrom County, Fars province, Iran

Vegetation Cover

The vegetation of this area includes forest trees, garden fruit trees, herbaceous plants in the under story of the gardens, and rangeland woody plants (Fig. 2). So that, the main forest plant species are included *Crataegus azarolus* L., *Juniperus excelsa* M.Bieb., *Ziziphus* spp., *Pistacia khinjuk* Stocks., and *Pistacia atlantica* Desf., Garden species such as Citrus limon, and *Phoenix* spp., Bushes and shrubs like *Astragalus* spp., *Artemisia* spp., and *Alhaji* spp., and herbaceous like *Marrubium vulgare*, *Malva sylvestris*, *Adiantum capillus-veneris*, and *Peganum harmala*.



Fig. 2 Landscape and ecosystems in Jahrom County

Specimen Collection and Plant Identification

The collected specimens were prepared and identified using taxonomic literature [9-11] and by comparison with the Herbarium of the University of Jiroft. Nomenclature was checked using the online database of the International Plant Names Index and The Plant List. The plant specimens were taken from the herbarium of the Department of Plant Biology, University of Jiroft, Jiroft, Iran. The voucher herbarium specimens were identified by one of the authors (S.H.H.) and rechecked and verified by taxonomic experts from the University of Jiroft [9-11].

Socio-demographic Characteristics

A total of 51 local informants were interviewed for data sampling (Fig. 3). The interviewees included farmers, skilled herbal healers, nomadic individuals, and local educated herbalists.



Fig. 3 Informants interview in Jahrom County

Informant age ranged from 32 to 76, and the majority of the interviewees of this study were males (61.6%), whereas 38.4% were females (Table 1). The informants were chosen selectively, and, after classifying the district into sub-areas, based on field visits and discussion with locals, identified and interviewed.

Table 1 Socio-demographic characteristics of the local informants in the Jahrom County (n= 51).

Characteristics		Abundance	Relative abundance
Gender	Male	29	56.86
	Female	22	43.13
Education	Primary level	11	21.56
	Secondary level	24	47.05
	Graduate	16	31.37
Age group	25-40	6	11.76
	41-55	31	60.78
	56-82	14	27.45
Occupation	Nomadic tribe	16	31.37
	Farmer	23	45.09
	Herbal healer	12	23.52

Ailment Classification

All the traditional medicinal uses and recorded illness were classified based on the International Classification of Primary Care (ICPC-2) (<http://www.who.int/classifications/icd/adaptations/icpc2/en/>). Some diseases and nontherapeutic applications which were not matched with the broad classification of ailments were modified. So that, low back pain, infections, and some nontherapeutic applications (anti-aging, flavoring of food, appetizing, vegetable, thirst, and insect control,) were classified as General and Unspecified category. A total of 15 disease categories were categorized as follow: (1) Gastrointestinal; (2) General and Unspecified; (3) Ophthalmological; (4) Ear, Nose and Throat; (5) Cardiovascular; (6) Hematological and immune mechanism; (7) Musculoskeletal; (8) Neurological; (9) Respiratory; (10) Dermatological; (11) Endocrine/ Metabolic and Nutritional; (12) Urological; (13) Cancer; (14) Pregnancy, Childbearing, Family Planning; and (14) Female Genitals (table 3).

Data Analysis

Quantitative statistical methods were applied for ethnopharmacological data analysis. In this regard, the use report (informant cited a medicinal plant or part(s) for a particular illness) was recorded. Additionally, this index was also used to determine the highly used medicinal plants for a particular disease. Factor of Informant Consensus (ICF) was employed to define the homogeneity of the ethnomedicinal data using the following formula: $ICF = (Nur - Nt) / (Nur - 1)$. In the ICF formula, Nur is the abundance of the use reports for a certain ailment group and Nt is the number of the medicinal plant species used for the same diseases category [12]. The ICF value ranges from 0 to 1. Factor of Informant Consensus is close to 1 when a few medicinal plants are recorded by a high percentage of the informants, demonstrating homogeneity of information about the usage of particular plant species. A low value of this index (near 0) indicates disagreement among informants about the usage of the plant species for a specific disease category [13]. An independent samples t-test was used to compare the use reports between the two main physiognomical forms (A: herbs; B: tree and shrub) of the medicinal plants.

RESULTS AND DISCUSSION

In this study, which covered Jahrom County, a total of 51 local informant interviews showed the utilization of 64 medicinal plant species for the treatment of various ailments across 15 ICPC categories. These medicinal plants belong to 58 genera of 33 families. All of the data about these recorded plant species are summarized in Table 3 based on the local names, voucher specimens, healing practices, part(s) used, drug preparation method, use report, and ICPC classification (Table 2). Lamiaceae, Asteraceae, and Apiaceae were the main utilized plant families, with 11, 8, and 4 plant species, respectively. The results of an independent samples t-test showed that there was a significant difference between the use reports of the two life forms (A: herbs, B: trees and shrubs) (p -value < 0.05). Specifically, 2978 use reports were calculated for the herbs (42 species) and 1954 for the trees and shrubs

(21 species). Other reports in this region [6] and other parts of the world [14] have confirmed the medicinal importance of trees and weeds.

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Table 2 Medicinal plants used by Locals in the Jahrom county, Fars province

Family	Scientific name	Local name Voucher no.	Use report	Medicinal Uses	ICPC	Preparation	Part used	Mode of Application
Anacardiaceae	<i>Pistacia atlantica</i> Desf.	Baneh UJH627	53	Immune system tonic (6), Pain relief (3), Blood sugar (4), Scars and boils healing (8), Diabetic wounds (7), Treatment of cracked heels (7), Bone tonic (8), Diarrhea (5), Hair tonic (4), Nerve tonic (8)	Blood-B, NER-N, MET-T, DER-S, MET-T, DER-S, SKE-L, GAS-D, DER-S, NER-N	Decoction, Poultice	Seed, Gum	Oral, Topical
Apiaceae	<i>Bunium persicum</i> (Boiss.) B.Fedtsch.	Ziresiah UJH277	38	Flavoring of food (6), Parasite repellent (2), Joint pains (8), Digestive (5), Lactiferous (4), Anti-depression (2), Carminative (6), Lipotropic (5)	OTH-A, GAS-D, SKE-L, GAS-D, PRE-W, NER-N, GAS-D, OTH-A	Decoction, Infusion, Mixed with food	Seed	Oral
Apiaceae	<i>Oliveria decumbens</i> Vent.	Den-e Kazerooni UJH299	111	Digestive disorders (6), Carminative (20), Blood sugar (29), Blood purifier (2), Anti-inflammation (3), Stomachache (2), Constipation (2), Diarrhea (2), Febrifuge (4), Antiseptic (3), Anti-bacterial (5), Hypertension (5), Liver tonic (7), Weight loss (3), Herpes simplex (4), Hair tonic (5), beekeeping (Mashkurak honey) (9)	GAS-D, GAS-D, MET-T, Blood-B, SKE-L, GAS-D, GAS-D, GAS-D, OTH-A, OTH-A, OTH-A, CAR-K, GAS-D, OTH-A, DER-S, DER-S, OTH-A	Decoction, beekeeping	Aerial parts	Oral
Apiaceae	<i>Ferula assa-foetida</i> L.	Anghozeh UJH245	117	Joint pains (13), Waste ache (18), Vermicide (22), Abortion (10), Hair and skin tonic (2), Headache (3), Menstrual pain relief (3), Hypertension (4), Toothache (16), Insect bites (2), Reduction of the urinary secretion (5), Reduce vein inflammation (7), Intestine anti-cancer (5), Carminative (3), Gastric ulcer (2)	SKE-L, SKE-L, GAS-D, PRE-W, DER-S, NER-N, GYN-X, CAR-K, GAS-D, OTH-A, URO-U, CAR-K, CAN-C, GAS-D, GAS-D	Powder, Poultice	Gum	Oral, Topical
Apiaceae	<i>Apium graveolens</i> L.	Karafs UJH221	58	Strengthening male sexual power (19), Fix premature ejaculation (14), Lipotropic (25)	PRE-W, PRE-W, OTH-A	Powder, Decoction, Juice	Aerial parts	Oral
Asteraceae	<i>Achillea eriophora</i> DC.	Boomadaran-e Gol Sefidoo UJH921	43	Common cold (4), Circumcision wound healing (2), Menstrual pain relief (3), Bleeding inhibition (5), Gastrointestinal disorders (7), Kidney Stone (12), Sinusitis (9), Diarrhea (1)	RES-R, DER-S, GYN-X, OTH-A, GAS-D, URO-U, NER-N, GAS-D	Poultice, Decoction	Flower	Oral, Topical
Asteraceae	<i>Achillea wilhelmsii</i> K.Koch	Berenjasf UJH922	52	Common cold (4), Rheumatism (3), Carminative (2), Diuretic (3), Stomachache (8), Nervous tonic (2), Parasite repellent (7), Bleeding inhibition (1), Asthma (3), Blood sugar (9), Skin disorders (2), Join pains (2), Menstrual regulation (2), Gastrointestinal antiseptic (4)	RES-R, SKE-L, GAS-D, URO-U, GAS-D, NER-N, GAS-D, OTH-A, RES-R, MET-T, DER-S, GYN-X, GAS-D	Decoction, Powder, Poultice Infusion	Flower, Leaf	Oral, Topical

Asteraceae	<i>Cichorium intybus</i> L.	Khatmi UJH925	63	Sour throat (11), Common cold (5), Hair tonic (7), Febrifuge (5), Kidney stone (1), Appetizer (2), Blood purifier (2), Skin hydration (8), Anti dandruff (2), Infant gingivitis (6), Asthma (5), Diuretic (4), Diarrhea (2), Sciatica pain (3)	RES-R, RES-R, DER-S, OTH-A, URO-U, OTH-A, Blood-B, DER-S, DER-S, GAS-D, RES-R, URO-U, GAS-D, NER-N	Maceration, Aromatic water	Flower, Leaf	Oral, Topical
Asteraceae	<i>Echinops persicus</i> Steven ex DC.	Khar shekaroo UJH989	45	Dry cough (9), Relief of respiratory disorders (7), Lung tonic (8), Anti-depressant (3), Memory improvement (5), Anti-cancer (2), Wound healing (2), Joint tonic (3), Infant jaundice (5), Heart attack prevention (1)	RES-R, RES-R, RES-R, NER-N, NER-N, CAN-C, DER-S, SKE-L, GAS-D, CAR-K	Decoction, Raw powder	Flower, Seed	Oral, Topical
Asteraceae	<i>Artemisia aucheri</i> Boiss	Dermeneh UJH934	99	Blood sugar (22), Joint pains (13), Insect bites (6), Gum tonic (11), Parasite repellent (10), Anti-cancer (1), Hair and skin tonic (1), Carminative (2), Relaxing (4), Opening of the respiratory tract (8), Hypnotic (2), Antimalarial (5), Stomachache (14)	MET-T, SKE-L, OTH-A, GAS-D, GAS-D, CAN-C, DER-S, GAS-D, NER-N, RES-R, NER-N, OTH-A, GAS-D	Decoction, Poultice	Flowering branches	Oral, Topical
Asteraceae	<i>Silybum marianum</i> (L.) Gaertn.	Kharmaryam UJH995	115	Fatty liver (23), Liver disorders (23), Skin itching (2), Jaundice (5), Immunity system tonic (10), Anti-stress (8), Anti-cancer (2), Blood sugar (6), Alzheimer's prevention (5), Increase libido (4), Increase fertility (5), Stomach acid regulation (3), Gastric tonic (2), Bone tonic (2), Anti-virus (6), Lactiferous (4)	GAS-D, GAS-D, DER-S, GAS-D, Blood-B, NER-N, CAN-C, MET-T, NER-N, PRE-W, PRE-W, GAS-D, GAS-D, SKE-L, OTH-A, PRE-W	Aromatic water, Decoction	Leaf	Oral
Asteraceae	<i>Cota tinctoria</i> (L.) J.Gay	Babooneh UJH939	97	Nervous pain relief (12), Nerve tonic (11), Diarrhea (3), Sleep regulation (7), Anti-anxiety (13), Wound healing (2), Eczema (3), Rheumatism (5), Asthma (4), Common cold (6), Anti-allergy (4), Anti-vomit for pregnant women (8), Eye inflammation (3), Tooth health (2), Menstrual pain relief (10), Sore throat (4)	NER-N, NER-N, GAS-D, NER-N, NER-N, DER-S, DER-S, SKE-L, RES-R, RES-R, OTH-A, GAS-D, EYE-F, GAS-D, GYN-X, RES-R	Decoction	Leaf, Flower	Oral
Asteraceae	<i>Tragopogon graminifolius</i> DC	Sheng UJH999	37	Stomach bleeding (2), Burn healing (4), Expectorant (4), Diarrhea (3), Tinea capitis treatment (3), Genital warts (5), Gastric pain relief (5), Liver tonic (5), Cough (6)	GAS-D, DER-S, RES-R, GAS-D, DER-S, GYN-X, GAS-D, GAS-D, RES-R	Decoction	Root, Leaf	Oral
Arecaceae	<i>Phoenix dactylifera</i> L.	NakhlUJH1123	323	Female fertility (16), Brain and nervous tonic (21), Joint pains (11), Blood fat (2), Hypertension (6), Wound healing (14), reduce premature skin aging (13), Anti-cancer (5), Lactiferous (8), Delaying menopause (7), Increase libido (10), Menstrual regulation (8), Energetic (12), Gastric tonic (4), Hair and skin tonic (6), Sedative (3)	PRE-W, NER-N, SKE-L, Blood-B, CAR-K, DER-S, DER-S, CAN-C, PRE-W, GYN-X, GYN-X, GYN-X, OTH-A, GAS-D, DER-S, NER-N	Mixed with honey and food	Pollen	Oral, Topical

				Gastric pain relief (11), Immune system tonic (4), Gastric ulcer (7), Hair tonic (6), Blood sugar (6), Anti-cancer (15), Watery eye prevention (8), Tooth pain relief (4), Eye tonic (5), Skin aging prevention (7), Head skin itching (6)	GAS-D, Blood-B, GAS-D, DER-S, MET-T, CAN-C, EYE-F, GAS-D, EYE-F, DER-S, DER-S	Oil	Kernel	Oral
				Sedative (9), Anti-stress (8), Aromatherapy (8), Nerve tonic (10), Increase Libido (17), Sleep regulation (7), Enhance ovulation in women (14)	NER-N, NER-N, NER-N, NER-N, GYN-X, NER-N, GYN-X	Mixed with tea, Aromatic water	Pith parenchyma	Oral
Boraginaceae	<i>Cordia myxa</i> L.	Sepestan UJH724	70	Sore throat (32), Cough (21), Cartilage tonic (2), Anti-diarrhea (2), Constipation (3), Intestinal colic (3), Kidney disorders (4), Hypertension (1), Febrifuge (2)	RES-R, RES-R, SKE-L, GAS-D, GAS-D, GAS-D, URO-U, CAR-K, OTH-A	Fruit, Nuts	Fruit	Oral
Boraginaceae	<i>Echium amoenum</i> Fisch. & C.A.Mey.	Gol-e gavzaban UJH734	72	Asthma (2), Anti-steers (15), Joint pains (5), Menstrual pain relief (5), Skin wrinkles (3), Eczema (4), Skin itching (3), Anti-dandruff (2), Anticonvulsants (3), Blood circulation (4), Weight loss (5), Sedative (8), Diuretic (7), Hypertension (6)	RES-R, NER-N, SKE-L, GYN-X, DER-S, DER-S, DER-S, DER-S, NER-N, Blood-B, OTH-A, NER-N, URO-U, CAR-K	Decoction, Infusion	Flower	Oral
Brassicaceae	<i>Descurainia sophia</i> (L.) Webb. ex Prantl	Khakshir UJH762	62	Constipation (10), Fatty liver (4), Aene (4), Increase libido (7), Anti-cancer (2), Breast inflammation (2), Anti-stress (6), Hoarseness (6), Skin transparency (5), Diarrhea (6), Carminative (3), Hypertension (4), Febrifuge (3)	GAS-D, GAS-D, DER-S, PRE-W, CAN-C, SKE-L, NER-N, RES-R, DER-S, GAS-D, GAS-D, CAR-K, OTH-A	Decoction, Syrup, Maceration	Seed	Oral
Brassicaceae	<i>Alyssum linifolium</i> Stephan ex Willd.	Goddoomeh UJH756	46	Sore throat (9), Expectorant (8), Lung disorders (11), Pertussis (8), Kidney stone (6), Appetizer (4)	RES-R, RES-R, RES-R, RES-R, URO-U, OTH-A	Decoction	Seed	Oral
Cannabaceae	<i>Cannabis sativa</i> L.	Shahdaneh UJH1240	31	Ear ache (2), Immune system tonic (8), Hair shine (6), Hypertension (6), Muscular tonic (5), Skin allergy (2), Reduction of menopausal symptoms (2)	Ear-H, Blood-B, DER-S, CAR-K, SKE-L, DER-S, DER-S, PRE-W	Nuts, Decoction	Seed, Leaf	Oral
Convolvulaceae	<i>Cuscuta epithymum</i> (L.) L.	Aftimon UJH792	148	Sedative (18), Hypotonic (21), Anti-depressant (20), Anti-anxiety (17), Exhilarating (8), Brain tonic (16), Headache (8), Blood purifier (9), Increase libido (7), Liver tonic (5), Constipation (2), Gastric ulcer (4), Anticonvulsants (3), Stomach ache (4), Diuretic (3), Joint pains (2), Anti-cancer (1)	NER-N, NER-N, NER-N, NER-N, OTH-A, NER-N, NER-N, Blood-B, PRE-W, GAS-D, GAS-D, GAS-D, NER-N, GAS-D, URO-U, SKE-L, CAN-C	Infusion, Decoction	Aerial parts, Fruit	Oral
Caryophyllaceae	<i>Dianthus orientalis</i> Adams	Mikhak UJH611	105	Tooth pain relief (29), Headache (12), Skin transparency (8), Wound healing (4), Hair tonic (5), Anti-dandruff (2), Uterine tonic (6), Increase libido (4), Anti-virus (6), Blood sugar (5), Immune system tonic (4), Sedative (9), Gastric ulcer (11)	GAS-D, NER-N, DER-S, DER-S, DER-S, GYN-X, PRE-W, OTH-A, MET-T, Blood-B, NER-N, GAS-D	Poultice, Infusion	Leaf, Flower	Oral, Topical

Euphorbiaceae	<i>Ricinus communis</i> L.	Karchak UJH499	68	Bruises and broken bones Healing (34), Hair and eyebrow tonic (13), Wound healing (15), Acaricide (3), Anti-allergy (3)	SKE-L, DER-S, DER-S, OTH-A, OTH-A	Poultice, Oil	Seed	Topical, Oral
Elaeagnaceae	<i>Elaeagnus angustifolia</i> L.	Senjed UJH544	79	Skin tonic (20), Nail growth (11), Bone tonic (8), Skin aging prevention (13), Cartilage tonic (6), Baby skin allergies caused by diapers (21)	DER-S, DER-S, SKE-L, DER-S, SKE-L, DER-S	Powder, extract, Poultice	Fruit skin, Seed	Oral, Topical
Fabaceae	<i>Astragalus fasciculifolius subsp.arbusculinus</i> (Bornm. & Gauba) Tietz	Anzaroot UJH645	46	Herpes simplex (4), Immune system tonic (8), Anticonvulsants (3), Hypertension (5), Anemia (4), Constipation (6), Ear infection (5), Diuretic (4), Cough (7)	DER-S, Blood-B, NER-N, CAR-K, Blood-B, GAS-D, Ear-H, URO-U, RES-R	Decoction, Poultice	Gum, Stem bark	Oral
Fabaceae	<i>Glycyrrhiza glabra</i> L.	Mahk UJH650	84	Common cold (8), Gastric tonic (6), Cough (6), Gastroesophageal reflux (5), Strengthen immune system (4), Tooth tonic (3), Anti-septic (2), Wound healing (4), Constipation (3), Sightedness improvement (7), Headache (3), Colic (10), Eczema (6), Blood sugar (14), Hot flashes (3)	RES-R, GAS-D, RES-R, GAS-D, Blood-B, GAS-D, OTH-A, DER-S, GAS-D, EYE-F, NER-N, GAS-D, DER-S, MET-T, OTH-A	Decoction, Poultice	Root	Oral, Topical
Fabaceae	<i>Melilotus officinalis</i> (L.) Pall.	Nakhoonak UJH697	64	Anemia (8), Nervous tonic (10), Immune system tonic (6), Headache and vertigo (5), Blood purifier (4), Lactiferous (4), Kidney stone (3), Bladder disorders (3), Sedative (3), Rheumatism (3), Expectorant (4), Menstrual regulation (2), Muscular cramp (3), Liver tonic (2), Diuretic (4)	Blood-B, NER-N, Blood-B, NER-N, Blood-B, GYN-X, URO-U, URO-U, NER-N, SKE-L, RES-R, GYN-X, SKE-L, GAS-D, URO-U	Vegetable, Poultice	Leaf, young stem	Oral
Lamiaceae	<i>Vitex agnus-castus</i> L.	Panj angosht UJH857	32	Menstrual regulation (14), Menstrual pain relief (10), Migraine headache (1), Reduction of menopausal symptoms (2), Amenorrhea (2), Acne and pimples (3)	GYN-X, GYN-X, NER-N, GYN-X, GYN-X, DER-S	Decoction, Infusion, Poultice	Aerial parts	Oral, Topical
Lamiaceae	<i>Teucrium polium</i> L.	Kalpooreh UJH819	65	Blood sugar (14), Immune system tonic (5), Prevention of osteoporosis (3), Gastric tonic (7), Oral infection (4), Stomachache (9), Dysentery (8), Anticonvulsants (2), Genital tonic (1), Facilitate menstruation (1), Febrifuge (6), Liver tonic (5)	MET-T, Blood-B, SKE-L, GAS-D, GAS-D, GAS-D, GAS-D, NER-N, GYN-X, GYN-X, OTH-A, GAS-D	Decoction	Leaf, young branches	Oral
Lamiaceae	<i>Thymus daenensis</i>	Avishan-e barik UJH838	95	Gastric parasite repellent (28), Anti-septic (12), Wound healing (8), Hypertension (2), Hair tonic (2), Dry cough (14), Bone tonic (2), Sinusitis (6), Oral deodorizing (8), Carminative (2), Lung infection (11)	GAS-D, OTH-A, DER-S, CAR-K, DER-S, RES-R, SKE-L, NER-N, GAS-D, GAS-D, RES-R	Infusion, Decoction	Leaf and flower	Oral
Lamiaceae	<i>Salvia macrosiphon</i> Boiss.	Marvak UJH812	60	Cough (17), Sore throat (15), Tonic for vocal cords (15), Tonic for immune system (5), Febrifuge (4), Gastric tonic (4),	RES-R, RES-R, RES-R, Blood-B, OTH-A, GAS-D	Decoction	Seed	Oral
Lamiaceae	<i>Melissa officinalis</i> L.	Badranjbooye UJH830	70	Anti-anxiety (9), Relaxing (10), Lung tonic (5), Sleep regulation (8), Liver and stomach tonic (4), Migraine headache (6), Menstrual regulation (4), Constipation	NER-N, NER-N, RES-R, NER-N, GAS-D, NER-N, GYN-X, GAS-D, RES-R,	Decoction, Poultice	Foliage	Oral

				(3), Cough (5), Skin brightener (2), Anti-menopause (2), Liver fat (2), Stomach reflex (3), Joint pains (4), Herpes simplex (2)	DER-S, GYN-X, GAS-D, GAS-D, SKE-L, DER-S			
Lamiaceae	<i>Mentha spicata</i> L.	Pooneh UJH832	92	Anti-vomit (11), Abdominal pain (14), Common cold (8), Sore throat (8), Febrifuge (2), Cough (3), Constipation (7), Influenza (10), Menstrual facilitation (3), Carminative (6), Diarrhea (9), Muscular cramp (2), Anti-virus (8), Airway system clearance (5), Intestine infection (5)	GAS-D, GAS-D, RES-R, RES-R, OTH-A, RES-R, GAS-D, RES-R, GYN-X, GAS-D, GAS-D, SKE-L, OTH-A, RES-R, GAS-D	Infusion, Mixed with food, Aromatic Water	Leaf and flower	Oral
Lamiaceae	<i>Thymus kotschyanus</i> Boiss. & Hohen.	Avishan-e koochi UJH880		Sore throat (21), Vaginal herpes (26)	RES-R, GYN-X	Decoction	Leaf and flower	Oral
Lamiaceae	<i>Nepeta cataria</i> L.	Nana UJH841	150	Gastric parasite repellent (14), Carminative (36), Diarrhea (35), Relaxing (5), Detoxificant (8), Asthma (4), Hoarseness (6), Cough (9), Breast pain relief (16), Digestive (10), Constipation (7)	GAS-D, GAS-D, GAS-D, NER-N, OTH-A, RES-R, RES-R, RES-R, NER-N, GAS-D, GAS-D	Aromatic water	Leaf	Oral
Lamiaceae	<i>Rosmarinus officinalis</i> L.	Rozmari UJH881	90	Relaxing (23), Hair tonic (18), Pain relief (22), Premature aging prevention (15), Liver purification (3), Gastrointestinal ulcer (4), Menstrual pain relief (5)	NER-N, DER-S, NER-N, DER-S, GAS-D, GAS-D, GYN-X	Oil, Poultrice, Decoction	Leaf	Oral, Topical
Lamiaceae	<i>Stachys lavandulifolia</i> Vahl	Chaye soozani UJH831	25	Relaxing (7), Analgesic (8), Anti-depressant (7), Common cold (3)	NER-N, NER-N, NER-N, RES-R	Decoction	Leaf	Oral
Lamiaceae	<i>Marrubium vulgare</i> L.	Farasion UJH820	77	Anti-cancer (3), Women's secretions (19), Anti-uterine cysts (17), Menstrual regulation (18), Uterine disorders (18), Ear infection (2)	CAN-C, GYN-X, GYN-X, GYN-X, Ear-H	Aromatic water	Flower	Oral
Lythraceae	<i>Punica granatum</i> L.	Anar UJH1021	105	Breast ulcer of lactating mothers (22), Diarrhea (19), Prevention of children enuresis (16), Vermicide (5), Heart tonic (2), Blood sugar (3), Anti premature aging (6), Alzheimer (2), Skin brightener (4), Wound and burn healing (5), Aphthous ulcer (7), Penile ulcer (2), Reduce menstrual bleeding (5), Acne (5)	DER-S, GAS-D, URO-U, GAS-D, CAR-K, MET-T, DER-S, NER-N, DER-S, DER-S, GAS-D, GYN-X, GYN-X, DER-S	Poultrice, Decoction, Powder	Flower, Fruit peel	Oral, Topical
Malvaceae	<i>Hibiscus sabdariffa</i> L.	Chay torsh UJH571	61	Hypertension (16), Blood fat (8), Common cold (3), Thirst quencher (3), Cough (2), Blood sugar (7), weight loss (3), Sedative (1), Face wrinkle (4), Blood circulation (6), Liver disorders (3), Febrifuge (2), Diuretic (3), Kidney stone (3), Muscle cramp (3)	CAR-K, Blood-B, RES-R, OTH-A, RES-R, MET-T, OTH-A, NER-N, DER-S, Blood-B, GAS-D, OTH-A, URO-U, URO-U, SKE-L	Decoction	Leaf	Oral

Malvaceae	<i>Malva sylvestris</i> L.	Tooleh UJH577	45	Anti-allergy (5), Allergic cough (7), common cold (8), Laxative (3), Constipation (2), Bladder infection (1), Anti-diarrhea (3), Urinary tract obstruction (2), Anti-jaundice (4), Burns (2), gastrointestinal tonic (2), Skin tonic (3), Anemia (2)	OTH-A, RES-R, RES-R, GAS-D, GAS-D, URO-U, GAS-D, URO-U, GAS-D, DER-S, GAS-D, DER-S, Blood-B,	Vegetable, cooked with boiled water	Leaf	Oral
Moringaceae	<i>Moringa peregrina</i> (Forssk.) Fiori	Gaz-e roogani UJH961	71	Premature aging prevention (9), Wound healing (5), Acne (7), Anti-cancer (4), Digestive (3), Fatty liver (11), Anti-depressant and Anti-anxiety (3), Blood sugar (4), Anti-osteoporosis (8), Eye tonic (4), Blood fat (7), Anemia (6), Hair tonic (9), Blood sugar (4)	DER-S, DER-S, DER-S, CAN-C, GAS-D, GAS-D, NER-N, MET-T, SKE-L, EYE-F, Blood-B, Blood-B	Oil, poultice	Seed	Oral, Topical
Myrtaceae	<i>Myrtus communis</i> L.	Moord UJH1050	13		DER-S, MET-T		Leaf, Seed	Oral, Topical
Myrtaceae	<i>Eucalyptus camaldulensis</i> Dehnh.	Okaliptoos UJH1700	77	Common cold (21), Sore throat (26), Sinusitis (30)	RES-R, RES-R, NER-N	Vapor, Decoction	Leaf	Oral
Nitrariaceae	<i>Peganum harmala</i> L.	Esfand UJH1060	94	Pain relief (10), Joint and Waist pains (12), Sedative (13), Gastric ulcer (23), Anti-depressant (8), Lactiferous (3), Intestinal parasite (4), Rheumatism (6), Stomachache (2), Anti-cancer (1), Increase libido (3), Menstrual pain relief (4), Headache (5)	NER-N, SKE-L, NER-N, GAS-D, NER-N, PRE-W, GAS-D, SKE-L, GAS-D, CAN-C, PRE-W, GYN-X, NER-N	Smoke, Powder, Decoction	Seed, Seed oil	Oral, Topical
Oleaceae	<i>Olea europaea</i> L.	Zeytoon UJH1066	91	Blood cholesterol regulation (11), Anti-cancer (4), Skin tonic (9), Hair tonic (7), Gout (2), Joint pains (2), Eye tonic (6), Hair graying prevention (10), Heart tonic and stroke prevention (15), Increase libido (8), Bone tonic (3), Gastric ulcer (4), Burn healing (4), Weight loss (6)	Blood-B, CAN-C, DER-S, DER-S, SKE-L, EYE-F, DER-S, CAR-K, PRE-W, SKE-L, GAS-D, DER-S, OTH-A	Decoction, Oil, Pickle	Leaf, Fruit	Oral, Topical
Papaveraceae	<i>Fumaria parviflora</i> Lam.	Shahtare UJH1093	130	Infant jaundice (12), Eye disorders (3), Eczema (16), Acne (15), Skin disorders (8), Bile treatment (6), Rheumatism (20), Migraine (6), Arteritis (9), Diuretic (3), Anti-parasite (5), Hypertension (11), Wound healing (8), Sedative (8),	GAS-D, EYE-F, DER-S, DER-S, DER-S, OTH-A, SKE-L, NER-N, SKE-L, GAS-D, CAR-K, DER-S, NER-N,	Decoction, Aromatic water	Leaf, Flower, Young branches	Oral, Topical, Bath
Platanaceae	<i>Platanus orientalis</i> L.	Chenar UJH487	58	Asthma (8), Eye tonic (5), Common cold (4), Febrifuge (4), Dysentery (6), Gastrointestinal disorders (7), Wound and burn healing (4), Acne (5), Hoarseness (2), Cough (3), Runny nose prevention (4), Joint pains (3), Anti-varicose veins (3)	RES-R, EYE-F, RES-R, OTH-A, GAS-D, GAS-D, DER-S, DER-S, RES-R, RES-R, RES-R, SKE-L, CAR-K	Decoction, Poultice	Leaf	Oral, Topical
Plantaginaceae	<i>Plantago lanceolata</i> L.	Barhang UJH490	59	Anemia (3), Treatment of gastric cold nature (6), Wound healing (3), Stomach reflex (5), Cough (4), Constipation (3), Eczema (3), Gastric ulcer (7), Sunburn healing (4), Acne (2), Anti-dandruff (4),	Blood-B, GAS-D, DER-S, GAS-D, RES-R, GAS-D, DER-S, GAS-D, DER-S, DER-S, URO-U, GYN-X, GAS-D, RES-R, RES-R	Decoction, Infusion, Poultice	Seed, Leaf	Oral, Topical

Plantaginaceae	<i>Plantago major</i> L.	Barhang UJH492	59	Diuretic (3), Menstrual pain relief (6), fatty Liver (5), Pertussis (2), Sore itching treatment (3) Anemia (3), Treatment of gastric cold nature (6), Wound healing (3), Stomach reflex (5), Cough (4), Constipation (3), Eczema (3), Gastric ulcer (7), Sunburn healing (4), Acne (2), Anti-dandruff (4), Diuretic (3), Menstrual pain relief (6), fatty Liver (5), Pertussis (2), Sore itching treatment (3)	Blood-B, GAS-D, DER-S, GAS-D, RES-R, GAS-D, DER-S, GAS-D, DER-S, DER-S, URO-U, GYN-X, GAS-D, RES-R, RES-R	Decoction, Infusion, Poultice	Seed, Leaf	Oral, Topical
Pteridaceae	<i>Adiantum capillus-veneris</i> L.	<i>Pr-e</i> <i>siavashan</i> UJH1170	98	Common cold (17), Throat infection (12), Sore throat (17), Cough (17), Asthma (14), Febrifuge (4), Measles (1), Menstrual regulation (6), Jaundice (2), Hair tonic (1), Anti dandruff (7)	RES-R, RES-R, RES-R, RES-R, RES-R, OTH-A, RES-R, GYN-X, GAS-D, DER-S, DER-S	Decoction, Powder	Leaf	Oral, Topical
Pedalicaceae	<i>Sesamum indicum</i> L.	Konjed UJH1140	86	Hypertension (10), Slimming and fitness (11), Memory tonic (13), Increase vitamin E (1), Blood fat (2), Liver tonic (5), Anemia (1), Bone tonic (2), Heart tonic (2), Skin-cancer (1), Prevention of facial wrinkles (9), Tooth tonic (1), Blood circulation (1), Food digestion (5), Hair tonic (12), Anti-dandruff (4)	CAR-K, OTH-A, NER-N, OTH-A, Blood-B, GAS-D, Blood-B, SKE-L, CAR-K, CAN-C, DER-S, GAS-D, Blood-B, GAS-D, DER-S, DER-S	Oil, Decoction	Seed	Oral, Topical
Rosaceae	<i>Prunus scoparia</i> (Spach) C.K.Schneid.	Alook UJH376	176	Hair tonic (20), Burn healing (21), Wound healing (15), Scar (16), Soup (16), Anti-inflammation (7), Anti-dandruff (9), Anti-cancer (8), Sightedness improvement (9), Anti-septic (2), Prevention of facial wrinkles (11), Male fertility (7), Waist ache (6), Fatty liver (1), Reduce the darkness around the eyes (11), Nail scalp repair (10), Ear ache (5), Headache (2)	DER-S, DER-S, DER-S, DER-S, OTH-A, SKE-L, DER-S, CAN-C, EYE-F, OTH-A, DER-S, PRE-W, SKE-L, GAS-D, DER-S, DER-S, Ear-H, NER-N	Mixed with food, Oil, Poultice	Seed	Oral, Topical
Rosaceae	<i>Crataegus azarolus</i> L.	Zalzalak UJH380	45	Liver disorders (6), Blood sugar (8), Hypertension (7), Sleep regulation (5), Blood fat (4), Eczema (2), Lipotropic (6)	GAS-D, MET-T, CAR-K, NER-N, Blood-B, DER-S, OTH-A	Decoction, Salad	Fruit, Leaf	Oral
Rosaceae	<i>Cydonia oblonga</i> Mill.	Beh UJH351	13	Cough (5), Respiratory disorders (8)	RES-R, RES-R	Decoction	Seed	Oral
Rutaceae	<i>Citrus aurantium</i> L.	Narenj UJH527	112	Sedative (22), Anti-depression (15), Hypotonic (11), Palpitation (2), Appetizer (2), Kidney stone (2), Skin clarity (8), Stomachache (2), Sunburn (9), Wound healing (7), Hair tonic (8), Treatment of skin dryness (8), Blood pressure regulation (6), Migraine headache (10)	NER-N, NER-N, NER-N, CAR-K, OTH-A, URO-U, DER-S, GAS-D, DER-S, DER-S, DER-S, CAR-K, NER-N	Aromatic water, Infusion	Flower	Oral, Topical
Rutaceae	<i>Citrus limon</i> (L.) Osbeck	Limo torsh UJH528	105	Sore throat (14), Common colds (12), Bone health (4), Ant-stress (5), Anti-cancer (7), Cholesterol reduction (9), Loss weight (5), Ear infection (11), Blood purifier (4), Liver tonic (5), Skin disorders (5), Sightedness improvement (6), Food digestion (8), Constipation (7),	RES-R, RES-R, SKE-L, NER-N, CAN-C, Blood-B, Ear-H, Blood-B, GAS-D, DER-S, EYE-F, GAS-D, GAS-D, GAS-D, SKE-	Fresh, Dry, Spice, Juice	Fruit, Skin fruit	Oral, Topical

Rutaceae	<i>Ruta graveolens</i> L.	Soddab UJH535	52	Tooth tonic (5), Anti-inflammation (3), Sedative (4), Improvement of sperm quality (9), Hypertension (8) Increase libido (2), Wound healing (6), Anti-Progeria (2), Relaxing (4), Joint pain relief (5), Arteritis (5), Menstrual regulation (3), Carminative (7), Gastrointestinal parasite repellent (3), Cystolith (2), Palpitation (2), Eye disorders (2), Hiccups (2), Ear ache (2)	L, NER-N, PRE-W, CAR-K PRE-W, DER-S, DER-S, NER-N, SKE-L, SKE-L, GYN-X, GAS-D, GAS-D, CAR-K, EYE-F, OTH-A, Ear-H	Decoction	Leaf	Oral
Rhamnaceae	<i>Ziziphus spina-christi</i> (L.) Desf.	Konar UJH1221	66	Laxative (16), Hair tonic (10), Anti-dandruff (8), Gastric tonic (7), Constipation (7), Bone tonic (4), Blood sugar (4), Scar (4), Anti-aging (6),	GAS-D, DER-S, DER-S, GAS-D, GAS-D, SKE-L, MET-T, DER-S, OTH-A	Shampoo, Eat as fruit, Poultrice,	Leaf, Fruit	Oral, Topical
Ranunculaceae	<i>Nigella sativa</i> L.	Siahdaneh UJH1190	58	Back ache (16), Treatment of gastric cold nature (9), Uterine cyst (7), Improvement of ovarian laziness (7), Increase libido (9), Treatment of infertility (10)	SKE-L, GAS-D, GYN-X, PRE-W, PRE-W, PRE-W	Powder, Mixed with honey, Poultrice	Seed	Oral, Topical
Solanaceae	<i>Solanum nigrum</i> var. villosum L.	Rooba torbak UJH1268	77	Pain relief (9), Laxative (14), Anti-cancer (2), Skin Anti-inflammation (2), Burns (4), Wound healing (6), Joint pains (12), Genital pain relief (8), Ear ache (7), Febrifuge (4), Diuretic (2), Asthma (4), Blood coagulation (3)	NER-N, GAS-D, CAN-C, DER-S, DER-S, DER-S, SKE-L, GAS-D, Ear-H, OTH-A, URO-U, RES-R, Blood-B	Decoction	Fruit	Oral
Urticaceae	<i>Urtica dioica</i> L.	Gazane UJH320	108	Blood sugar (10), Prostate (3), Anemia (13), Diuretic (9), Backache and arteritis (7), Anti-inflammation (4), Anti-allergy (3), Ovarian cysts (5), Menstrual regulation (7), Infertility improvement (6), Bone tonic (2), Psoriasis and Eczema (5), Lactiferous (6), Menstrual pain relief (5), Anti-gingivitis (2), Constipation (4), Carminative (2), Joint pains (5), Hypertension (6)	MET-T, URO-U, Blood-B, URO-U, SKE-L, SKE-L, OTH-A, GYN-X, GYN-X, PRE-W, SKE-L, DER-S, GYN-X, GYN-X, GAS-D, GAS-D, GAS-D, SKE-L, CAR-K	Infusion	Leaf and flower	Oral
Xanthorrhoeaceae	<i>Aloe vera</i> (L.) Burm.f.	Aloevera UJH1500	45	Skin softness (12), Treatment of head skin dryness (6), Hair tonic (9), Blood sugar (4), Sunburn healing (6), Wound healing (8)	DER-S, DER-S, DER-S, MET-T, DER-S, DER-S	Poultrice	glazed materials	Topical
Vitaceae	<i>Vitis vinifera</i> L.	Ghooreh UJH1390	49	Hypertension (6), Blood fat (3), Anti-cancer (2), Gums bleeding ban (5), Fatty food digestion (4), Gastric tonic (4), Liver tonic (3), Dysentery (3), Eye tonic (7), Anti-vomit (8), Menstrual facilitation (4)	CAR-K, Blood-B, CAN-C, GAS-D, GAS-D, GAS-D, GAS-D, GAS-D, EYE-F, GAS-D, GYN-X	Juice, Nuts	Fruit	Oral
Zygophyllaceae	<i>Tribulus terrestris</i> L.	Khar khasak UJH1555	122	Kidney stone (29), Increase male libido (16), Prostate disorders (20), Diuretic (14), Urinary tract ulcer (15), Oral infection (4), Joint pains (2), Reduce appetite (1),	URO-U, PRE-W, URO-U, URO-U, URO-U, GAS-D, SKE-L, OTH-A, DER-S, DER-S, PRE-W, PRE-W	Decoction	Aerial parts	Oral

Skin allergy (4), Eczema (3), Increase fertility (6),
Reduction of menopausal complications (3)

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Use Report

Some medicinal plants, such as, *Phoenix dactylifera*, *Cuscuta epithymum*, and *Prunus scoparia*, had high use reports in this region. Although *P. dactylifera* is a fruit tree, it is known as an important medicinal and therapeutic source in the Jahrom region, which is one of the birthplaces of this plant in Iran. In this regard, each of its parts has different uses. Its pollen is widely used as a memory enhancer, to prevent premature skin aging, to increase libido, and to treat infertility. Additionally, its pith parenchyma, in the form of aromatic water or mixed with tea, is used as a sexual tonic and as a sedative and anti-stress agent. Animal model studies [15] have confirmed the fertility effect of date pollen, and phytochemical studies suggest that its steroidal constituents are responsible for this effect [16].

Cuscuta epithymum, a weed of farms and gardens in the Jahrom region, is considered one of the most widely used ethnomedicinal plants in this region. It is used in the treatment of a wide range of mental and nervous diseases, such as depression, anxiety, and stress, as well as a memory enhancer and sexual desire stimulant.

Prunus scoparia is a widely used plant in this region for the treatment of skin disorders and as a skin tonic. According to local interviews, it is very useful for treating wounds, scars, dandruff, and skin rejuvenation, as well as a nail and hair tonic, especially for women. Additionally, scientific reports indicate that almond oil prevents water loss from the body, balances the skin's moisture, and makes it smooth and soft [17].

Informant Consensus Factor (ICF)

As shown in Table 3, dermatological ailments scored the highest informant consensus factor (ICF) (0.94). This high ICF is due to the high use reports of medicinal plants such as *Cichorium intybus*, *Prunus scoparia*, *Glycyrrhiza glabra*, *Citrus aurantium*, *Ricinus communis*, *Fumaria parviflora*, *Rosmarinus officinalis*, *Ziziphus spina-christi*, *Elaeagnus angustifolia*, and *Aloe vera*, which are used for the treatment of dermatological ailments. These plants are mainly used as hair and skin tonics, in the treatment of wounds, or as premature aging prevention. In other words, cosmetic uses and wound healing recorded the highest number of use reports (Nur) by the local communities of Jahrom County. For example, *Elaeagnus angustifolia* seed oil is used by local communities to treat skin disorders and allergies caused by wearing diapers in babies. This application has not been recorded in other reports in other regions of Iran or neighboring countries. In Turkish folklore, *E. angustifolia* is used as an antipyretic, kidney disorder healer, body tonic, anti-diarrheal, and general body tonic [18, 19]. In Iranian traditional medicine, it is used for the treatment of jaundice, asthma, rheumatism, and fever [20]. This traditional knowledge is not specific to herbal healers, but the general public of this region also uses this substance to treat skin allergies caused by diapers in babies. The analysis of the findings indicates that the difference between the ethnobotanical knowledge of Jahrom County and other regions is that the well-known and common plants with other regions are used very differently but effectively in the treatment of diseases, which shows the cultural antiquity of phytotherapy in this region. It is also an obvious example of cultural, ecological, and therapeutic interactions in this region.

Respiratory diseases scored the second highest informant consensus factor (ICF) (0.94). Findings revealed that medicinal plants of Jahrom County are widely used for the treatment of respiratory ailments. Specifically, the following species had high use reports in the treatment of cough, common cold, sore throat, and as expectorant traditional herbal drugs: *Malva sylvestris*, *Cordia myxa*, *Cichorium intybus*, *Citrus limon*, *Adiantum capillus-veneris*, *Echinops persicus*, *Glycyrrhiza glabra*, *Salvia macrosiphon*, and *Mentha spicata*. For example, the fresh fruits of *Cordia myxa* were frequently used for the treatment of sore throat (UR=32) and cough (UR=21). *Citrus limon* fruit was used whole and without removing the skin to treat sore throats and colds. Additionally, the decoction of the flowers of *Malva sylvestris* and *Cichorium intybus* was used as a potent expectorant in Jahrom County. In other regions of Iran, such as Kerman province, which is adjacent to the studied region, the maceration of these two plants is used to reduce blood pressure or as a laxative [21]. These unique uses are part of the differences in the traditional ethnopharmacological culture of the locals of Jahrom County.

Neurological ailments were scored the third highest informant consensus factor (ICF) (0.93). The high ICF of neurological disorders is due to the high use reports of plant species such as *Stachys lavandulifolia*, *Citrus aurantium*, *Cuscuta epithymum*, *Melissa officinalis*, *Rosmarinus officinalis*, *Dianthus orientalis*, and *Nigella sativa*. For example, *Cuscuta epithymum*, which is considered a weed plant, was reported to be highly used for

the treatment of neurological diseases such as epilepsy and depression, in accordance with the prescriptions of the Iranian traditional medicine physician Abureyhan Al-biruni [22]. Biological assays have also confirmed the ethnobotanical and Iranian traditional medicine applications of *C. epithymum* in the treatment of neurological ailments [23]. From a chemical point of view, sterols, phenolic acids, flavonoids, tocopherols, and carotenoids are reported as the main constituents of this medicinal plant species [24].

Gastrointestinal disorders were also scored the third highest informant consensus factor (ICF) (0.93), which is consistent with many reports in Iran and other parts of the world [25-27]. Based on field visits and discussions with herbal healers, we obtained different information for the treatment of gastric ulcer. Specifically, they prescribed decocted *Peganum harmala* to treat gastric ulcer, using one cup of this extract every three or five days, as they believed that overuse of *P. harmala* extract could lead to toxic effects. This is a new and interesting report of a different culture of ethnopharmacological knowledge in Jahrom County, which has been recorded for the first time in Iran. However, in other ethnobotanical reports and traditional medicine systems around the world, this plant species is used in the treatment of a wide range of ailments, such as an antimicrobial, carminative, and pain reliever [28, 29].

In unexpected results, we found that female diseases in two categories (Female Genital and Pregnancy, Childbearing, and Family Planning) had high ICF values (> 0.90). Our findings and discussions with local informants showed that some plant species, such as *Marrubium vulgare*, *Vitex agnus-castus*, *Tribulus terrestris*, *Phoenix dactylifera*, and *Urtica dioica*, are well-known herbs for the treatment of women's diseases. For instance, in a significant difference from the studies conducted in other regions of Iran (Sistan and Baluchestan province: [21, 27, 30]), where *Tribulus terrestris* is known as a treatment for kidney diseases, in Jahrom County it is mainly used in pregnancy, childbearing, and family planning applications, including increasing libido and decreasing menopausal complications.

Also, in the ethnomedicinal culture of Jahrom County, a combined prescription is used to treat vaginal herpes. At the beginning of the disease, butter and olive oil are mixed and rubbed on the external and internal parts of the vagina five times a day. Additionally, *Thymus* spp. decoction is drunk once a day. Local herbal healers believe that this prescription improves wounds, rashes, and inflammation caused by the disease and prevents further rashes and inflammation by reducing the itching caused by this ailment. They also believe that *Thymus* spp. plays a role in eliminating and reducing the infection caused by this illness. In one case, after using the mentioned prescription for a few days and visiting a specialist doctor, the doctor diagnosed that the prescription partially controls the disease and that it is better to use this traditional treatment method if there is no access to treatment facilities (Figure 4).

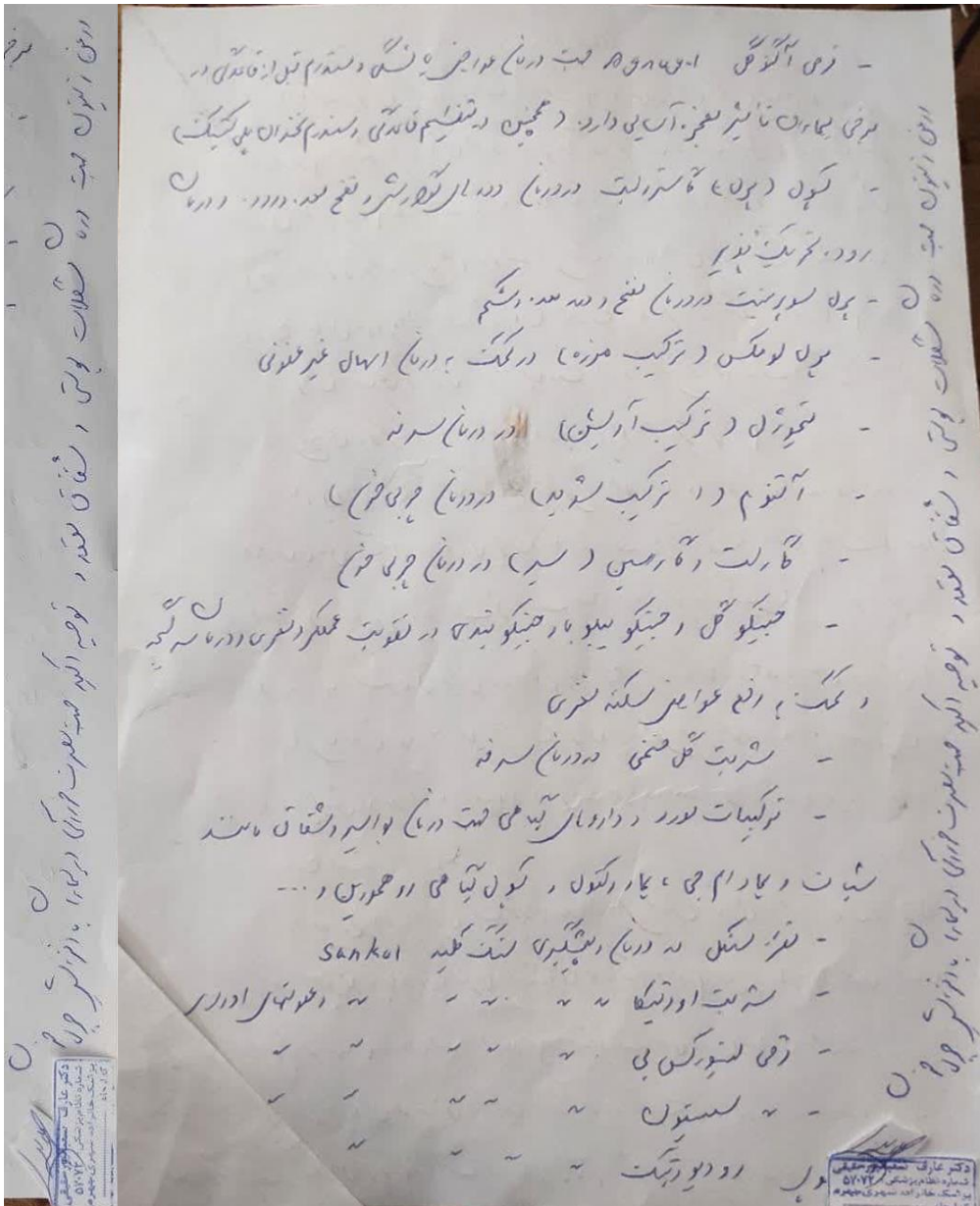


Fig. 4 Prescription of vaginal herpes in Jahrom County

Dominant Ailments

Results showed that medicinal plants of this region have the most application in the treatment of constipation (Nur=102; Nt=11), diarrhea (Nur=92; Nt=13), common cold (Nur=103; Nt=11), cough (Nur=90; Nt=13), sedative (Nur=98; Nt=11), pain relief (Nur=69; Nt=6), wound healing (Nur=118; Nt=18), hair tonic (Nur=142; Nt=15), eczema (Nur=44; Nt=8), menstrual disorders (Nur=104; Nt=16), increase libido (Nur=79; Nt=10), and infertility (Nur=50; Nt=6). In the other words, the most Nur was belonged to the mentioned diseases respectively. From in-depth interviews with local communities and analysis of the findings, it follows that lemon is one of the established treatment habits for respiratory diseases such as sore throat in this region. The cosmetic and health uses of plants in this region are relatively numerous and diverse. Additionally, the use of medicinal plants in the treatment of women's and family planning issues is of particular importance and distinction, likely rooted in the cultural, social, and traditional herbal medicine of this region.

Table 3 ICF for ailment categories in the Jahrom county, Fars province

	ICPC categories	Recorded ailments with related Nur	Nt *	Nur **	ICF value ***
1	Musculoskeletal (SKE-L)	Cartilage tonic (2,6), Joint pains (8,11,12,13,2,2,5,12,13,5,4,5,2), Rheumatism (3,6,20,3,5), Joint tonic (3,3), Anti-inflammation (7,3,4,3,2), Waist ache (6, 18,16), Bone tonic (2,2,4,2,2,2,3,4,8,8), Bruises (34), osteoporosis (3,8), Arteritis (9,7,5), Muscle cramp (3,3,2), Muscle tonic (5)	38	318	0.88
	Digestive (GAS-D)	Laxative (3,14,16), Constipation (2,3,3,2,7,4,2,3,7,3,7,10,7,6), Diarrhea (3,2,1,2,2,9,19,3,3,35,6,3,5), Jaundice (4,2,2,5,5,12), Intestinal colic (3,10), Parasite repellent (2,7,4,10,5,28,3,14), Digestive (5,8,4,10,3), Carminative (6,2,2,2,2,20,3,7,6,36,3), Gastrointestinal disorders (7,4,6), Stomachache (8,2,9,2), Infant gingivitis (6), Gastric tonic (4,7,4,4), Gastric pain relief (11,8,5), Gastric ulcer (7,2,4), Tooth pain relief (4,29), Stomachache (2,14,6,14), Fatty liver (1,23,2,5,11,4), Gum tonic (11,2), Oral infection (4,4), Gastric reflux (5,3,5), Tooth tonic (3,5,2), Liver tonic (5,5,5,7,4,2,3,3,5), Gastric ulcer (4,4,11,7,23), Liver disorders (23,3,6), Stomach acid regulation (3), Oral deodorizing (8), Anti-gingivitis (2), Vermicide (22,5), Anti-vomit (11,8,8), Intestine infection (5), Aphthous ulcer (7), Gastric cold nature (6,9), Stomach bleeding (2)	52	847	0.93
	Respiratory (RES-R)	Common cold (3,8,21,4,5,17,8,3,8,4,21), Allergic cough (7,17,9), Sore throat (32, 11,17,15,8,9,26,21), Asthma (3,5,14,4,8,2,4), Measles (1), Throat infection (12), Respiratory disorders (7), Cough (9,6,14,17,2,5,3,3,4,9,6,5,7), Respiratory disorders (7,8), Lung tonic (8,5), Opening of the respiratory tract (8), Lung infection (11), Tonic for vocal cords (15), Expectorant (4,8,4), Airway system clearance (5), Hoarseness (2,6,6), Runny nose prevention (4), Pertussis (2,2,8), Sore itching treatment (3,3), Lung disorders (11)	29	554	0.94
4	Neurological (NER-N)	Relaxing (7,4,4,10,5,23), Analgesic (8), Anti-depressant (7,2,3,15,20,3), Migraine headache (1,10,6,6), Sinusitis (9,6,30), Nervous tonic (2,21,10,10,11,8), Sciatica pain (3), Sedative (3,9,13,22,18,4,8,1,3,8,9), Anti-stress (8,8,5,15,6), Aromatherapy (8), Sleep regulation (7, 8,7,5), Memory improvement (5, 13, 16), Pain relief (10,9,12,16,29,3), Headache (5,2,3,8,3,5,12), Hypnotic (2,11,21), Anti-anxiety (17,9,13), Anticonvulsants (3,2,3,3), Alzheimer's prevention (5,2)	39	661	0.94
5	Skin (DER-S)	Burns (2,21,4,4,4,4), Skin tonic (3,9), Acne and pimples (3,15,5,2,7,4), Wound healing (2,2,4,7,8,8,6,4,5,3,2,5,4,14,15,15,8), Skin disorders (2,5,8), Hair tonic (7,1,6,6,20,12,8,13,2,5,7,5,18,10,9,4,9), Skin hydration (8), Anti dandruff (2,7,9,4,2,2,8), reduce premature skin aging (13), Hair and skin tonic (6,1,2, 20), Skin aging prevention (7), Scar (16,8), Prevention of facial wrinkles (11,9,4,3), Nail scalp repair (10,11), Skin allergy (4,2, 21), Eczema (3,6,16,5,3,3,4,2), Skin clarity (8), Sunburn (9,4,6), Skin dryness (8), Skin itching (2,6,3), Herpes simplex (4,2,4), Skin Anti-inflammation (2), Anti- Progeria (2,6,9,15,13), Skin brightener (2,4), Breast ulcer of lactating mothers (22), Skin transparency (5,8), Hair shine (6), Hair graying prevention (10), Tinea capitis treatment (3), Treatment of cracked heels (7), Skin softness (12), Treatment of head skin dryness (6), Hair tonic (9)	48	797	0.94
6	General and Unspecified (OTH-A)	Anti-allergy (5,3,13,4), Febrifuge (2,5,4,6,4,4,2,4,3), Flavoring of food (6), Lipotropic (5,25,6), Appetizer (2,2,4), Energetic (12), Soup (16), Anti-septic (2,2,12,3), Insect bites (6), Antimalarial (5), Reduce appetite (1), Slimming and fitness (11), Increase vitamin E (1), Tooth tonic (3), Hot flashes (3), Exhilarating (8), Anti-virus (6,8,6), Acaricide (3), Bile treatment (6), Anti-bacterial (5), Weight loss (3,3,5,6), beekeeping (Mashkurak honey) (9), Insect bites (2), Thirst quencher (3), Hiccups (2), Detoxificant (8), Anti-aging (6),	38	279	0.86
7	Ophthalmological (EYE-F)	Watery eye prevention (8), Eye tonic (5,5,7,4,6), Sightedness improvement (9,7,6), Eye disorders (3,2), Eye inflammation (3),	12	49	0.77

8	Urological (URO-U)	Bladder infection (1), Urinary tract obstruction (2), Kidney disorders (4), Kidney Stone (12,1,29,2,3,3,6), Diuretic (3,4,14,3,9,2,3,3,3,7,4), Prostate disorders (20), Urinary tract ulcer (15), Prostate (3), Reduction of the urinary secretion (5), Bladder disorders (3), Prevention of children enuresis (16)	19	180	0.89
9	Endocrine/ Metabolic and Nutritional (MET-T)	Blood sugar (9,3,22,14,6,14,10,29,7,3,4,5,4,4,4,8,8), Diabetic wounds (7)	18	135	0.87
10	Female Genital (GYN-X)	Women's secretions (19), Uterine cysts (17,7), Menstrual regulation (18,14,2,6,8,3,4,2), Uterine disorders (18), Menstrual pain relief (10,3,5,3,6,10,5,5), Reduction of menopausal symptoms (2), Amenorrhea (2), Delaying menopause (7,2), Increase libido (10,17,3), Enhance ovulation in women (14), Facilitate menstruation (1,3,4), Ovarian cysts (5), Menstrual regulation (7), Lactiferous (6,4), Penile ulcer (2), Reduce menstrual bleeding (5), Uterine tonic (6), Genital warts (5), vaginal herpes (26)	26	296	0.91
11	Cardiovascular (CAR-K)	Hypertension (1,6,10,6,8,11,2,6,5,4,16,6, 4,6,7,5), Heart attack prevention (1), Heart tonic (2), Palpitation (2), Reduce vein inflammation (7), Anti-varicose veins (3), Heart tonic and stork prevention (15)	22	133	0.84
12	Pregnancy, Childbearing, Family Planning (PRE-W)	Fix premature ejaculation (14), Increase libido (9, 19,4,8,7,2,4,7, 16,3), Treatment of infertility (10,6,5,6,7,16), Abortion (10), Improvement of sperm quality (9), Lactiferous (4,3,8,4), Reduction of menopausal complications (3,2)	17	174	0.90
13	Blood, Blood Forming Organs and Immune Mechanism (Blood-B)	Anemia (2,1,13,8,3,3,6,4), Blood fat (2,2,8,3,4), Immune system tonic (4,10,5,5,6,8,4,6,8), Blood circulation (2,4,7,6), Blood purifier (9,2,4,2), Cholesterol reduction (9, 11), Blood coagulation (3),	26	166	0.84
14	Cancer (CAN-C)	Anti-cancer (3,5,15,2,1,8,1,1,1,2,7,2,5,2,4,2,4,)	18	50	0.58
15	Ear (Ear-H)	Ear infection (2,11, 5), Ear ache (5, 7, 2,2)	8	9	0.11

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Medicinal Plant Parts used

13 plant parts, including leaf, seed, flower, fruit, gum, aerial parts, root, branches, stem, pollen, pith parenchyma, Kernel, and bark were used to prepare crude drugs in Jahrom County (Figure 5). Leaf (27.8%) was the most widely used plant part, followed by seed (20.6%), flower (15.45%), and fruit (13.6%). Various reasons like ease access, conservation points, and efficiency of the used plant parts could lead to which parts choose for ethnobotanical applications [21, 31].

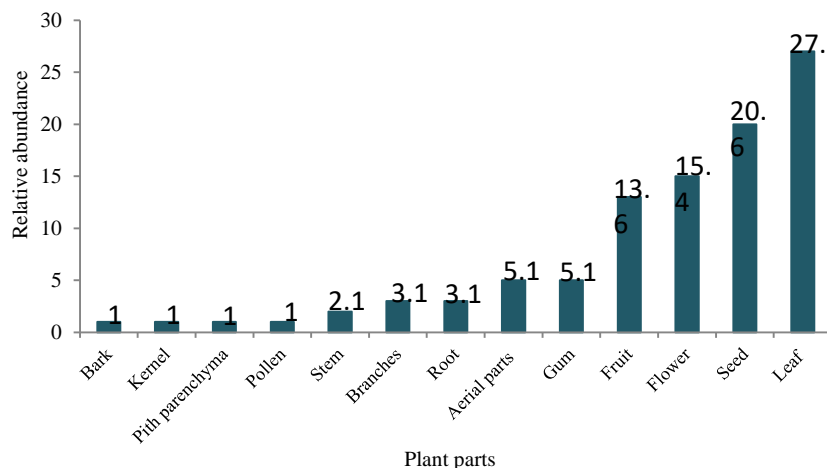


Fig. 5 Relative abundance of plant parts used in ethnobotanical drug preparation

Preparation Modes of Traditional Drug Preparation

15 forms of preparation methods including decoction, poultice, infusion, powder, oil, aromatic water, juice, nuts, maceration, vegetable, salad, shampoo, pickle, syrup, and spice were recorded in this study. The most common of drug preparation and applications were decoction, poultice, infusion, powder, oil, and aromatic water respectively (Figure 6). Discussion with the local informants revealed that they believed decoction is more efficient to separate the chemical constituents of the medicinal plants. Other studies confirmed these findings [32]. Field visits showed special differences in some cases. For instance, instead the maceration method which is used to prepare *Malva sylvestris*, and *Cichorium intybus* in the other parts of Iran [27, 30, 33], but in Jahrom County decoction is the method for preparation this herb in treatment of respiratory disorders.

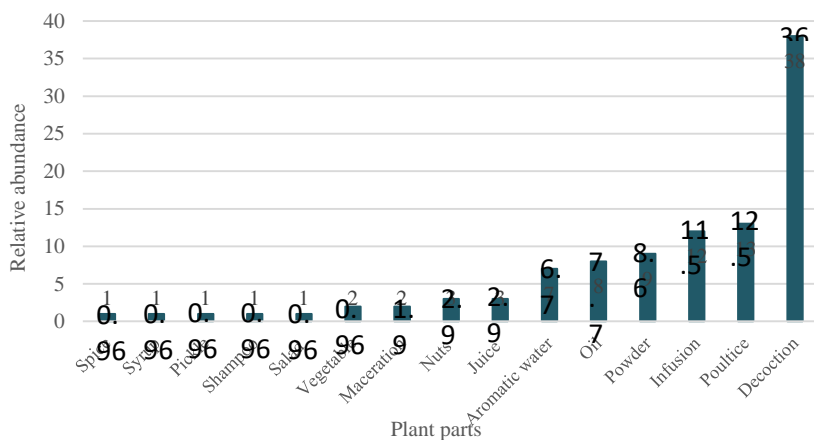


Fig. 6 Relative abundance of crude drug type

The traditional medicinal drugs utilized in three categories included oral, topical, and bath. The most common administration method was oral (67.70%), followed by topical (31.25%) and poultice (17.02%) (Figure 7).

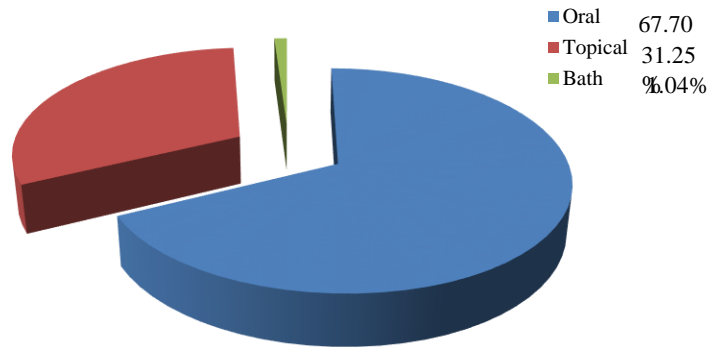


Fig. 7 Relative abundance of mode of herbal drug administration

CONCLUSION

Field visits and literature reviews revealed that Jahrom is a region with an ancient history and culture. As it was an important part of the territory of the Achaemenid government, many of the medicinal habits of the people of this region are rooted in Iranian traditional medicine. As a result, the locals of this region have discovered the best and most effective medicinal uses of plants over time. On the other hand, there is a distinct culture of traditional medicine in this region, which seems to be the result of a long interaction of cultural, ecological, and traditional medicine factors. In this way, a significant portion of the medicinal uses of this region are related to fruit trees and weeds (such as *Malva sylvestris*, *Phoenix dactylifera*, *Cuscuta epithimum*, and *Prunus scoparia*). Based on interviews with local informants, the medicinal uses of these plants are very effective and different, but important ethnopharmacological applications for most of these plant species have not been recorded in other reports. Additionally, these ethnobotanical findings suggest that agricultural plants could have medicinal uses with high added economic value.

ABBREVIATION

ITM: Iranian traditional medicine

AUTHORS' CONTRIBUTION

S.H.H designed performed the work and participated in all parts of the article. F.K collected the data.

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AVAILABILITY OF DATA AND MATERIALS

All data generated or analyzed during this research are included in this article.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This research was reviewed and approved by the Research Deputy at the University of Jiroft. The organization of the institute does not involve an Ethics Committee, therefore there is no certain ethics code assigned to this research project. However, each research proposal, like the one corresponding to the current work, is comprehensively reviewed by the university until an approval code is granted. Generally, this research did not involve any intervention and all questions from local individuals were conducted with prior verbal consent.

CONSENT FOR PUBLICATION

Not applicable.

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CONFLICT OF INTEREST

All the authors declare no conflict of interest.

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