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PRELIMINARY STUDY OF PLANTS USED IN ETHNOVETERINARY MEDICINE IN TUNISIA AND IN ITALY

Lucia Viegi [a*], Kamel Ghedira[b]

[a]Department of Biology, Botany Unit, Pisa University, Via L. Ghini, 13, 56126 Pisa, Italy,
[b]Université de Monastir, Faculté de Pharmacie, Laboratoire de Pharmacognosie, Unité de Recherche "Substances naturelles bioactives et biotechnologie (UR12 ES12)", Rue Avicenne, 5000 Monastir, Tunisie.
***E-mail**: lucia.viegi@unipi.it

Abstract

Background: A survey relative to the use of plants for the cure of animals in Tunisia was conducted in order to make a comparison with the same species (or similar ones) in central and southern Italy.
Materials and methods: available bibliographical data both for Italy and for Tunisia were consulted.
Results: Thirty-nine plants, representing 22 families, used in Tunisia in ethnoveterinary medicine were reported, and comparisons made with close species used in Central and Southern Italy. Seven of the 39 species (about the 18% of the total) are not present in Italian flora. Fourteen of the 39 species (35% of the total) are also used in Italy. Camelidae (dromedaries and camels) are the most valuable types of domestic animals cured in Tunisia, but ovines, horses, bulls, dogs are also treated. Some uses coincide with those existing in different Italian regions. The plants used are the most common and most easily found in these areas.
Conclusion: The present study confirms the convergence in ethnoveterinary medicine between Tunisia and Italy, even if it appears less significant than in human ethnobotany. Further studies are required in areas of Tunisia that have not yet been studied, in order to get the possibility of an evaluation of active compounds.

Key words*:* Ethnoveterinary medicine; Plants; Tunisia; Italy.

Introduction

As a continuation of a former comparative study on medicinal plants used in Italy and in Tunisia (Leporatti and Ghedira, 2009), in which only one species was cited as a cure for animals (*Capsicum annuum* for cattle and sheep trachoma), we have examined bibliographic references related to the use of plants for the cure of animals in Tunisia in order to make a comparison with the same species (or similar species) in central and southern Italy (Viegi et al., 2003; Bullitta et al., 2007).

The aim of this study, besides the preservation of traditional knowledge of local communities, is to compare and possibly evaluate active compounds from the most significant species, as valuable source of new ideas and information.

Materials and methods

Available bibliographical data for Italy (Viegi *et al.*, 2003**;** Guarrera, 2006; Bullitta *et al.*, 2007; Viegi, 2010; Viegi and Vangelisti, 2010) and different handbooks, articles and web sites for Tunisia were examined (Trabut, 1935; Le Mordant *et al.*, 1977; Boulos, 1983; Le Floc'h, 1983; Boukef ,1986; http://www.uicnmed.org/nabp/database/NA_Plants.htm). The used scientific nomenclature is according to Conti et al. (2005) for Italian species, and http://www.theplantlist.org/1/ for Tunisian species.

Results and Discussion

A total of thirty-nine species belonging to 22 plant families were individuated (one Pteridophytae, two Gymnosperms, 19 Angiosperms in which 17 are Dicotyledons and two Monocotyledons), which were used by shepherds, breeders and farmers for the treatment of various animal diseases in Tunisia (Tab.1).

For each species, we have considered scientific and vernacular name, therapeutic use (animals), used part, manipulation, bibliographical reference (numbers). The family with the greatest number of medicinal plants was Asteraceae (four species), confirming its preponderance in the folk botanical literature (Viegi *et al.*, 2003). This was followed by Fabaceae, Brassicaceae and Cupressaceae (three species each), and by a series of different families with two or one species each.

Seven of the 39 species (about 18% of the total), *Calligonum comosum* (Le Floc'h, 1983; http://www.uicnmed.org/nabp/database/NA_Plants.htm), *Cymbopogon schoenanthus* (Boulos, 1983; Le Floc'h, 1983; http://www.uicnmed.org/nabp/database/NA_Plants.htm), *Diplotaxis acris* var. *duveyrierana* (Le Floc'h, 1983), *Haloxylon scoparium* (sub *Arthrophyton schmittianum*) (Le Floc'h, 1983), *Pituranthos scoparius* (Boukef, 1986), *Retama raetam* (Boukef, 1983; http://www.uicnmed.org/nabp/database/NA_Plants.htm), *Callitris articulata* (sub *Tetraclinis articulata*) (Le Floc'h, 1983) are not present in Italian flora. In Italy (Sicily and Calabria), a subspecies, *Retama raetam* subsp. *gussonei*, has been described, for which no medicinal use is known.

Just four species are currently used only in Tunisia (*Calotropis procera* (Boulos, 1983), *Capparis spinosa* (Le Floc'h, 1983), *Diplotaxis harra* (http://www.uicnmed.org/nabp/database/NA_Plants.htm), *Thymelaea hirsuta* (Le Floc'h, 1983; http://www.uicnmed.org/nabp/database/NA_Plants.htm).

Fourteen of the 39 species (35% of the total) are also used in Italy: *Allium sativum* (Boulos, 1983; De Capite and Menghini, 1973; Ferri, 1977; Chiavoni and Raffo, 1994; Nardelli, 1987; Guarrera and Tammaro, 1991; Guarrera, 1994, De Simoni and Guarrera, 1994; Ciccodicola, 1995; Atzei, 2003; Pieroni *et al.*, 2004; Guarrera 2005; Guarrera *et al.*, 2008; Salerno and Guarrera, 2008; Viegi, 2010); *Atriplex halimus* (Le Floc'h, 1983; De Capite and Menghini, 1973); *Capsicum annuum* (Boukef, 1986; Guarrera, 1994,1995; Ciccodicola, 1995)**;** *Centaurea calcitrapa* (Boukef, 1986; Atzei, 2003); *Ceratonia siliqua* (Boukef, 1986; Atzei, 2003; Salerno and Guarrera, 2008); *Dryopteris filix-mas* (Le Floc'h, 1983; De Capite and Menghini, 1973); *Ecballium elaterium* (Boukef, 1986; Lentini and Aleo, 1991; Pieroni *et al.*, 2002; Pieroni *et al.*, 2004);

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Table 1: Plant species used in Tunisia and in Italy in ethnoveterinary medicine

Family and Botanical name	Tunisian name	Italian name	Tunisian use	Italian use	Part used in Tunisia	Part used in Italy	Tunisian manipulation	Italian manipulation	Bibliographical references (N°)
Anacardiaceae									
Searsia pentaphylla (Jacq.) F.A.Barkley (syn. *Rhus pentaphylla* (Jacq.) Desf.)	jdari	sommacco cinquefogliato	veterinary use						27
Apiaceae									
Apium graveolens L.	klafes	Sedano	Stimulate abortion (animals)		fruits				4
Cuminum cyminum L.	kemmoun		veterinary use						4
Pituranthos scoparius (Coss. & Durieu) Schinz	gazzah		Scabies (sheep)		a.p.		fumigation (inhalation of burned a.p.), e.u.		3
Apocynaceae									
Nerium oleander L.	defla; ward el-homar		ulcers in animaIs		leaves		pounded dry		4
		oleandro		cutaneous mycoses (dogs)		flower buds		desiccated and reduced to powder, e.u.	10
		-		antiparasitic		leaves		-	2
		-		against moles		branches		sticked in the ground	De Fine, pers. com
				eczema behind ears (dogs, cats)		flower branches		ointment with lard, e.u.	De Fine, pers. com.
		-		repellent for cockroaches		leaves		e.u.	31
				parasiticide (swines, farmyard animals)		aerial parts			1
Asclepiadaceae									
Calotropis procera (Ait.) Ait. f.			Scabies (camels and goats)		bark and latex		decoction		4
Aspidiaceae									

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Dryopteris filix-mas (L.) Schott	sarkhas		dismatosis of sheep		rhizome		powder		27
				vermifuge (in particular taenia or tapeworm)		rhizome		ethereal extract , i.u.	16
Asteraceae									
Artemisia herba-alba Asso	shih		parasiticide		essential oil		essential oil distilled from plant		4
Carlina involucrata Poir.			veterinary use						27
Centaurea calcitrapa L.	bounaggar		jaundice		roots		water soaking (maceration) i.u.		3
Senecio cineraria DC.	aqhouan abiadh		care of wounds						27
Boraginaceae									
Heliotropium bacciferum Forssk.			anti-scabies		plasters				4
Brassicaceae									
Diplotaxis acris (Forsskål) Boiss. var. *duveyrierana*			veterinary use						27
Diplotaxis harra (Forsk.) Boiss.	harra		a rub for scab (animals)		seeds or leaves		decoction		iucnmed
Lepidium sativum L.	rched		fattening (bulls); care of wounds (horse, camel)		seeds		food; grinded seeds mixed with henna		27
Capparidaceae									
Capparis spinosa L.			veterinary use						27
Caprifoliaceae									
	okkez sidi moussa		laxative		fruit, stem bark				27
Sambucus nigra L.		sambuco		to reduce udders inflammation after labour (cattle)		aerial parts		decoction, suffumigations, e.u.	13
		sambuco		for gastrointestinal ailments (chicken)		bark		water macerate, i.u.	9; 8
				healing (cattle)		bark		ointment, e.u.	45
				laxative (dogs)		fruits		juice, i.u.	16

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				for sprains and pulled muscles (draft animals)		bark		heated and dried, e.u.	36
				purgative (cattle)		root		decoction, i.u.	36
				for colds		flowers		suffumigatons, e.u.	20
				healing		flowers		e.u.	20
		sammuco		for "white spots" of the skin (pets)		leaves		decoction, e.u.	19
		samuche		to catch flies		flowers		soaked in whey, hung in the stables, e.u.	34
				for colds (cattle)				i.u.	19
		sammùche		wounds (mules)		leaves		decoction, e.u.	24
		saùco		sore or inflamed body parts (goats, cows)		flowers		dried, heated in olive oil, e.u.	41
				attracts flies, which are then captured		branches		unaltered, in the rooms, e.u.	37
				for horses bitten by a rabid dog		seed		crushed, e.u.	1
						leaves		juice, e.u.	1
				wounds (pets)		leaves		soaked, e.u.	6
				nail infections (pets)		leaves		soaked, e.u.	6
Chenopodiaceae									
Haloxylon scoparium (Moq.) Pomel (syn. *Arthrophytum schmittianum* (Pomel) Maire & Weiller; *Arthrophytum scoparium* (Pom.) Iljin)	remeth		sheep scabies		a.p.		powder mixed with tobacco powder and oil, applied on scabies plaque		27
Atriplex halimus L.	gtaf, oataf		trypanosomiasis (camel)						27
		sa sèlema		to fatten sheep and pigs		plant		dietary supplement, i.u.	1
Cucurbitaceae									

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			veterinary use						27
Colocynthis vulgaris Schrader (syn. *Citrullus colocynthis* (L.) Schrader)	handal;		certain skin diseases of camels; against scorpion stings		hot sap of plant ; sap of unripe green fruits				4
			cattle fodder						Iucnmed
Ecballium elaterium (L.) A. Rich.	faqous h'mir, faqous el bhayem		jaundice		fruit		sap (nose instillation), e.u.		3
		cucumaridde		antiseptic on suppurating wounds (cattle, goats, sheep)		fruits		juice, local, e.u.	39
				vulnerary (cattle)				juice, e.u.	38
		milunedda di surci		purgative (mules)		fruits		dietary supplement, i.u.	30
Cupressaceae									
Tetraclinis articulata (Vahl) Masters (syn *Callitris articulata* (Vahl) Link., *C. quadrivalvis* Rich.)	araar		parasitic diseases, scabies (camel), inflammed wound		tar (dried distilled wood)		cream for application		27
Juniperus oxycedrus L., *J. oxycedrus* subsp. *oxycedrus*	taga		antiseptic, parasiticide, cutaneous diseases		tar or cade oil (dried distilled wood)				27
	taga, aaraar		animal's skin diseases						Iucnmed
				lameness (livestock), scab and ulcer (sheep)		resin		e.u.	35
		inibbre		to favour placenta expulsion (cows)		cones		decoction, i.u.	34
		tinneberu		limb abrasions (sheep)		resin		e.u.	5
				ulcers, skin affections due to parasites and scabes (animals)		resin		oil from trunk by pyrogenation, e.u.	1
Juniperus phoenicea L.			veterinary use						27
Fabaceae									

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Ceratonia siliqua L.	kharroub		leucoma		Leaves		decoction as eye instillation, e.u.		3
				dietary supplement (horses, mules)		fruits		i.u.	1
		sciuscella, erba cavalli		animals (horses)		dried fruits		fodder, i.u.	40
Retama raetam Webb & Berthel.	rtam		scabies		aerial parts		poultice, e.u.		3, iucnmed
Trigonella foenum-graecum L.	helba		fodder crop; purgative		all parts; seeds		food, i.u.		27
		dragonelle		pigeons		seeds		fodder, i.u.	38
				fodder (pregnant sheep and goats)		aerial parts		i.u.	38
Lamiaceae									
Ajuga iva (L.) Schreber	chandgoura		rabies (dog)		aerial parts		mixture with food, i.u.		3
Salvia verbenaca L.	tamerzouga		care of wound (horse)		Leaves		powder applied on wounds, e.u.		27
		schiaraluce		haemostatic, antiseptic (swines)		small branches		in the ears, e.u.	17
Liliaceae									
Allium sativum L.	thoum, toum		veterinary use						4
		Aglio		vermifuge (calves)		bulb		e.u.	Maccioni, Marchini, pers. com.
		Aglio		vermifuge		bulb		-	10
		Aglio		skin diseases		bulb		e.u.	18
		-		tonic, diuretic, antiseptic, anticatarrhal; antiparasitic;		bulb		dietary supplement, i.u.	16
				irritating, clearing up				e.u.	16
				digestive (cattle)				i.u.	36
		egl'; agl		anthelmintic		bulb		dietary supplement, i.u.	11

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		-		intestinal deseases (poultry)		bulb		dietary supplement, i.u.	20
		-		worms (sheep)		aerial parts		dietary supplement, i.u.	20
		Ajo		disinfectant (poultry)		bulb		water soaked (also with ash or vinegar), i.u.	22
		Aje		disinfectant (poultry)		bulb		water soaked (also with ash or vinegar), i.u.	17
		Aglio		dietary supplement, vermifuge (dogs), iu		bulb		lard pills with garlic inside, i.u.	24
				dietary supplement, iu, vermifuge (dairies, calves, goats, lambs)		bulb		with crushed aerial parts of *Ruta chalepensis*, i.u.	26
		Aglio		anthelmintic (cattle, sheep)		bulb		cold soaked with aerial parts of *Calamintha sylvatica*	38
				worms					11
		Agliu		bronchitis (farmyards birds)		bulb		water soaked, i.u.	40
				diuretic (horses)		bulb		crushed bulb, egg white, wine; i.u.	1
				brocken winded horses				mixed with ash, e.u..	1
				horn cuts (cattle)				with vinegard and salt; e.u.	1
				after emasculation (animals)				crushed, mixed with brine, e.u.;	1
				colic analgesic (horses)				dried, in suffumigation; e.u.	1
				pneumonia (cattle, horses)				in suffumigation with dried orange peel, sugar, "orbace"	1
				wound disinfectant (poultry)				oil emulsion; e.u.	1
				helmintiasis (swines)				cooked with mash, i.u.	1
				helmintiasis (animals)				cloves decoction, i.u.	1
				intestinal worms (cattle, equines,				mixed with vinegar, i.u.	6

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				ovines)					
				antiseptic in hoof infections (cattle, equines, ovines)				soaked, e.u.	6
			rat poison				red squill is dried, powdered		4
Urginea marittima (L.) Baker	Aansal		fowl diseases		Bulb		decoction, i.u.		3
		cipuddazzu		with broad beans and horse beans to ward off pests (insects and mice) from the barns, silos, etc..		plant		e.u.	De Fine, pers. com.
				to remove the mice from cattle		bulb		cut and rubbed on the skin, e.u.	25
		cipuddazzu		repellent for mice		bulb		e.u.	30
		cipuddazzu		pruritic dermatitis		cataphylls		e.u.	29
				wounds		bulb		e.u.	29
		scipuddazzu		rodenticide		bulb		e.u.	31
		cibùdda de kòga		"zoppina" (goats), disinfectant, vulnerary		bulb		crushed and blended, e.u.	1
				icthyotoxic				unaltered	1
Pinaceae									
Pinus pinaster Aiton	snouber		veterinary use				ointment		27
		pin, pin sarvego, pin servàdegu		for dealing distortions and to treat the injured limb (especially sheep)		resin		plasters, e.u.	7
Poaceae									
	ied elkhir		veterinary use						27
Cymbopogon schoenanthus (L.) Spreng.	sha'ret et-trab		wounds of camels				cataplasm		4
			dromedary wounds						iucnmed
Polygonaceae									
Calligonum comosum L'Hér.	Arta		scabies (camel)		roots				27, iucnmed
Rumex tuberosus L.	hommidh, hommidha		jaundice		roots		water soaking (maceration) i.u.		3

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Solanaceae									
Capsicum annuum L.	felfel		trachoma		fruit		powder of dried fruit applied in the eyes, e.u.		3
		peperoncino		to increase eggs production (chicken)		fruits		dietary supplement, i.u.	20, 21
		peperoncino		revulsive on swollen glands (livestock)		fruits		cataplasms, e.u.	11
		peperoncino		to fatten animals				dietary supplement, i.u.	11
Nicotiana glauca Graham	dokhane		leucoma		leaves		chewed and squeezed in the eyes, e.u.		3
Tamaricaceae									
Tamarix aphylla (L.) H.Karst. (syn. *T. articulata* Vahl.)	tarfa		scabies (camel)		gall		tar		27, iucnmed
Thymelaeaceae									
Thymelaea hirsuta Endl.	methnan		cold and nose flow (ewe)		a.p. (ash)		ash applied on nose of ewe, e.u.		27
	mithnane		colds (ewes)				branches and ashes		Iucnmed

Abbreviations: a.p. aerial parts; e.u., external use; i.u., internal use; pers. com., personal communication.

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Juniperus oxycedrus (Le Floc'h, 1983; http://www.uicnmed.org/nabp/database/NA_Plants.htm; Manzi, 1989; Mearelli and Tardelli, 1995; Bruni *et al.*, 1997; Atzei, 2003); *Nerium oleander* (Boulos, 1983; Bellomaria and Della Mora, 1985; Lentini *et al.*, 1988; Chiavoni and Raffo, 1994; Atzei, 2003); *Pinus pinaster* (Le Floc'h, 1983; Camangi *et al.*, 2009); *Salvia verbenaca* (Le Floc'h, 1983; De Simoni and Guarrera, 1994); *Sambucus nigra* (Le Floc'h, 1983; De Capite and Menghini, 1973; Corsi *et al.*, 1981; Guarrera, 1987, Nardelli, 1987; Manzi, 1989; Guarrera, 1994; Camangi and Uncini Manganelli, 1999; Viegi *et al.*, 1999; Atzei, 2003; Scherrer *et al.*, 2004; Passalacqua *et al.*, 2006; Bullitta *et al.*, 2007; Guarrera *et al.*, 2008); *Trigonella foenum-graecum* (Le Floc'h, 1983; Pieroni et al., 2004); *Urginea maritima* (Boulos, 1983; Boukef, 1986; Lentini, 1987; Lentini et al., 1988; Lentini and Aleo, 1991; Atzei, 2003; Guarrera et al., 2005).

Eighteen of the 39 species (46% of the total) belong to genera and/or families similar to those used in Italy: *Ajuga iva* (Boukef, 1986), *Apium graveolens* (Boulos, 1983), *Artemisia herba-alba* (Boulos, 1983), *Calotropis procera* (Boulos, 1983), *Carlina involucrata* (Le Floc'h, 1983), *Citrullus colocynthis* (Boulos, 1983; Le Floc'h, 1983), *Cuminum cyminum* (Boulos, 1983), *Diplotaxis acris* var. *duveyrierana* (Le Floc'h, 1983), *D. harra* (http://www.uicnmed.org/nabp/database/NA_Plants.htm), *Juniperus phoenicea* (Le Floc'h, 1983), *Nicotiana glauca* (Boukef, 1986), *Pituranthos scoparius* (Boukef, 1986), *Rhus pentaphylla* (Le Floc'h, 1983), *Rumex tuberosus* (Boukef, 986), *Sambucus nigra* (Le Floc'h, 1983), *Senecio cineraria* (Le Floc'h, 1983), *Tamarix aphylla* (Le Floc'h, 1983; http://www.uicnmed.org/nabp/database/NA_Plants.htm), *Thymelaea hirsuta* (Le Floc'h, 1983; http://www.uicnmed.org/nabp/database/NA_Plants.htm).

The Tunisian literature quotes twenty-one species for generic veterinary use in Tunisia, eight for curing camelidae, five for ovines, two for horses, and one each for bulls, dogs and fowl.

The most utilized plant parts, both in Tunisia and Italy, are aerial parts, followed by fruits, leaves, roots and seeds.

The main uses in Tunisia are for the treatment of scabies, particularly in camelidae (eight species), for wounds (six species), jaundice and dermatosis (three species each), to cure parasitosis, as a laxative, for leucoma, fattening (two species for each), to induce an abortion, as an antiseptic, for trachoma, dismatosis, trypanosomiasis, rabies, and cold (one species).

In particular, 9 Tunisian species are used as follows: roots of *Calligonum comosum* are effective for scabies (Camelidae); tar (dried distilled wood) of *Callitris articulata* is used to cure parasitic diseases, scabies (camelidae), and inflammed wounds; cataplasms of *Cymbopogon schoenanthus* cures the wounds of dromedaries; *Haloxylon scoparium* to cure sheep scabies (powder mixed with tobacco powder and oil, applied on scabies plaque); fumigation (inhalation of burned aerial parts) of *Pituranthos scoparius* is used for scabies (sheep); poultice of aerial parts of *Retama retam* to combat scabies; ash of *Thymelaea hirsuta* for colds and nose flow (ewes); *Capparis spinosa*, *Diplotaxis acris* var. *duveyrierana*, are reported for general "veterinary use"

The same species, or ones belonging to the same plant families, are used in both Italy and Tunisia as follows**:** *Pituranthos scoparius* against scabies (acaridae) in Tunisia (Boukef, 1986) and *Carum carvi* for dog scabies in Italy, notably in Umbria (De Capite and Menghini, 1973); *Heliotropium bacciferum* as an anti-scabies treatment in Tunisia (Boulos, 1983), while in Italy (Tuscany), *Cynoglossum officinale* is used to treat eczema (de Bellis, 1978,1988), *Echium vulgare* for "vaiolella" (similar to smallpox) and bovine tinea in Tuscany (Viegi *et al.*, 2003), and for snakebites (ovines, dogs) in Abruzzo (Tammaro, 1976). Amongst the *Brassicaceae*, in Tunisia *Lepidium sativum* is used for fattening (bulls) and for the treatment of wounds (horses, camelidae) (Le Floc'h, 1983), while in Italy (Umbria), *Brassica nigra* is used as a revulsive, a rubefactant and a vesicant for livestock (De Capite and Menghini, 1973); *B. oleracea* is used to treat ovine and bovine mastitis in Abruzzo (Manzi, 1989). In Tunisia *Juniperus oxycedrus* is used as an antiseptic, parasiticide, and for cutaneous diseases (Le Floc'h, 1983; http://www.uicnmed.org/nabp/database/NA_Plants.htm) and in Italy (notably in Tuscany) for ulcers, skin affections due to parasites and scabies (Mearelli and Tardelli, 1995) and to treat limb abrasions (sheep) in Sardinia (Bruni *et al.*, 1997). *Salvia verbenaca* is a cure for wounds (horses) in Tunisia (Le Floc'h, 1983) and in Italy (Abruzzo) as a haemostatic and antiseptic for swine, (De Simoni and Guarrera, 1994). The fruit of *Sambucus nigra* is used as a laxative in Tunisia (Le Floc'h, 1983), and in Italy (Umbria) it is used as a laxative for dogs and a purgative for cattle (De Capite and Menghini, 1973; Nardelli, 1987); *Trigonella foenum-graecum* is known as a fodder crop; in Tunisia it is used as a purgative (Le Floc'h, 1983), while in Italy (Lucania) it is used as fodder for pigeons, sheep and pregnant goats (Pieroni *et al.*, 2004); *Urginea maritima* is used as a rat poison both in Tunisia (Boulos, 1983) and in Italy (Sicily) (Lentini and Aleo, 1991); *Nerium oleander* is used to cure ulcers in animals in Tunisia (Boulos, 1983); in Italy (Tuscany) it is used for cutaneous mycosis in dogs (Chiavoni and Raffo, 1994) and in Calabria, for eczema behind the ears in dogs and cats (Passalacqua *et al.*, 2006); in Tunisia *Nicotiana glauca* is a cure for leucoma (Boukef, 1986); in Italy (notably in Sardinia) *Nicotiana tabacum* is used as an antiseptic for eye infections in sheep and goats, (Atzei, 2003); in Tunisia *Dryopteris filix-mas* is used in cases of distomatosis (due to *Fasciola hepatica*) (Le Floc'h, 1983), and in Italy (notably in Umbria) as a vermifuge, particularly for taenia or tapeworm (De Capite and Menghini, 1973); *Artemisia herba-alba* is used as a parasiticide in both Tunisia (Boulos, 1983) and in Italy, notably in Tuscany (Mambrini and Vicarelli, 1983); *Artemisia abrotanum* is used as a parasiticide in kennels (dogs, cats); *Senecio cineraria* is used for the treatment of wounds in Tunisia (Le Floc'h, 1983); *Senecio vulgaris* is used against snake bites (cattle, sheep, goats) in Italy, notably in Lucania (Pieroni *et al.*, 2004).

Conclusion

The present study confirms the convergence between Tunisia and Italy (Leporatti and Ghedira, 2009) in therapeutic uses of several plant species also in ethnoveterinary medicine, even if it appears less significant than in human ethnobotany. This could serve to guide future research, and particularly to seek information on plant remedies for animals in areas of Tunisia that have not yet been studied. New data might be collected in collaboration with herbalists in the towns and with collectors in rural regions, where species are collected in the wild.

Herbal remedies used for hundreds of years by people in both Italy and Tunisia could be put to commercial use as plant resources, to sensitize the government for sustainable utilization and long term conservation of plants in areas. Traditional knowledge obviously needs to be validated in order to verify the safety and efficacy of treatments in animals.

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