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Ethnopharmacology in the work of Melville William Hilton-Simpson (1881-1938) - historical analysis and current research opportunities

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In the early 20th century, the British anthropologist Melville William Hilton-Simpson (1881-1938) did explorations in Africa, mainly the Congo region and the Aurès region in Algeria. He showed considerable interest in local medicinal practices and plants used by the natives, mainly the Algerian Berbers. He left notes, letters and publications about traditional medicine which were screened for relevant information about medicinal plant use. His reports were compared with current knowledge and recent study results. Many plants described by Hilton-Simpson as therapeutically relevant could prove their efficacy in current studies which again shows that historical sources may exert some reliability. The study, however, unveiled a couple of plants reported as traditionally used, but neglected by modern science so far. These, including *Marrubium supinum*, *Cynoglossum pictum* (= *C. creticum*), *Sonchus maritimus*, and two *Erodium* species, are strongly recommended to be further studied. Foresightedly, this approach was already intended by Hilton-Simpson himself.

1. Introduction

Traditional uses significantly contribute to the available evidence in phytopharmacy (Helmstädter and Staiger 2014) and a considerable amount of the uses reported could be confirmed by recent research. In turn, it seems reasonable to use the historical knowledge as a starting point for phytopharmaceutical research rather than screening plant materials at random (Holland 1994; Buenz et al. 2004). Relevant information may not only be found in old herbals or pharmacopoeias but also in publications, diaries and letter of botanical or anthropological explorers. This has already been shown in the case of Berthold Seemann who's writings revealed significant information on the traditional use of medicinal plants not yet scientifically investigated (Helmstädter 2015). In continuation of our research program, publications and handwritten notes of the British anthropologist Melville William Hilton-Simpson (1881-1938) were investigated. He explored the Congo region as well as Northern Africa, mainly Algeria. Some of his publications are specifically devoted to surgical and medicinal practices of the early 20th century including the use of plants (Hilton-Simpson 1913, 1922). There is also unpublished material like manuscripts, diaries and notes of phytopharmaceutical interest, stored in the archives of the Royal Anthropological Institute, London, the Royal Botanical Gardens, Kew, Richmond, and the Pitt-Rivers-Museum, Oxford. These sources were screened for information about medicinal plants and their use in folk medicine. The information given is compared to current knowledge in order to unveil opportunities for further research.

2. Investigations and research

2.1. Melville William Hilton-Simpson (1881-1938)

Hilton-Simpson was born in 1881 and graduated as an anthropologist at Wellington and Exeter College, Oxford. His primary interest was devoted to the African people and he started a first field trip to the Sahara in 1903. From 1907 to 1909 he accompanied the Hungarian anthropologist Emil Torday (1875-1931) on his expedition to the Congo region, supported by the British Museum. From 1912 onwards, Hilton-Simpson devoted his interest to the culture of the Algerian Berbers and spent some years in the Aurès massif together with his wife. The stay there was interrupted by the years of World War I. The natives became highly familiar with him so that he was able to receive information otherwise kept secret. Eventually, he was also able to produce a movie on life and habit of the Aurès people ("An unknown race") together with John A. Haeseler (1900-1990), later becoming a famous producer. Having been suffering from bad health for many years, Hilton-Simpson died March 17, 1938 (N.N.a, b 1938).

2.2. Congo expedition

Hilton-Simpson, Torday and two other men started their journey to the Congo October 1, 1907 arriving there by the end of October (Hilton-Simpson 1907/8). In his diaries, Hilton-Simpson revealed some interest in local medicinal practices and plants, but did not particularly note their traditional uses. On the contrary, he reported treatments of natives with remedies obviously carried from home: "*After dinner in the evening the Dr. and Imperatori came in for a drink and conversation turned on the hardihood of the nation in pain and illness, and their liking for drastic remedies; witness the fact that our boys will eat till they get really bad indigestion and then ask for a huge dose of Epsom salts. Smelling ammonia was very popular at Mokunji, Jodoform is a popular remedy for cuts.*" (Hilton-Simpson 1907/8, Vol. II, p. 73; for Epsom salt see Homan 1998). The use of Epsom salt is mentioned several times (Hilton-Simpson 1909, Vol. 7, p. 66 f.; Hilton-Simpson 1907/8, Vol. III, p. 25, "doing a little doctoring today") as are treatments with tabloids under problematic circumstances: "*We found the poor old boy suffering acutely from years with an attack of fever into the bargain so T [Torday] gave him some tabloids. The taking of this was rather a business for the old man's fetish forbad him drinking cold water, so some had to be warmed to assist in the swallowing of the tabloids. This was brought by the old man's aged wife in a rather dirty pot with some manioc sprinkled in it.*" (Hilton-Simpson 1907/8, Vol. III p.38). Another patient treated with quinine tabloids against malaria was only willing to swallow them completely hidden below a blanket so that nobody could see him taking the drug (Hilton-Simpson 1911, p. 103-104.). Other remedies mentioned in the report include boric acid against an ophthalmic inflammation caused by red pepper sprinkled in the

eyes as a punishment (Hilton-Simpson 1907/8, vol. 5, p. 55), the malt extract Bovril applied to a wounded man (Hilton-Simpson 1908, vol. 3, p. 6, Hilton-Simpson 1911, p. 222), and an iron tonic against neuralgic pain (Hilton-Simpson 1908, vol. 3, p. 8). In 1911, Hilton-Simpson published a written account about this journey (Hilton-Simpson 1911).

2.3. Aurès expeditions

2.3.1. Magic versus science

While during his Congo expedition, Hilton-Simpson did note almost nothing about local medicinal practises, this changed completely when he returned to Africa in 1912 to study the Algerian Berbers (Shawia) in the Aurès mountains. As soon as in 1913, he published an account on "Arab and Shawia remedies" (Hilton-Simpson 1913). He admited, however, that many medicinal practices were of more or less magical nature: "*As is invariably the case among peoples who are still in a primitive state of culture the border line between medical science and magic is so ill-defined as to be almost non-existent […]* (Hilton-Simpson 1913, p. 706). So he described the following habit in the treatment of fever: "*The feathers of the hoopoe (Arabic "hadhad") are put on the fire while the patient stands over it so that his body is enveloped in the smoke from the burning feathers"* (p. 707). The fumigation of dried chamaeleons against wounds and sores may also be seen in a magical context. Material used and regarded as medicinal plants in a more rational

Fig. 1: Hilton Simpson's notebook cover (Copyright Pitt Rivers Museum, University of Oxford)

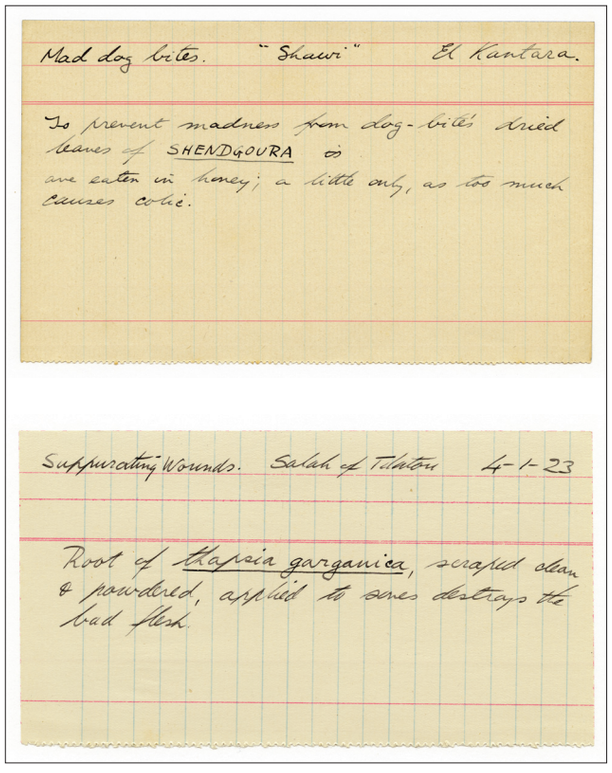

Fig. 2: Hilton Simpson's notebook cover (Copyright Pitt Rivers Museum, University of Oxford)

way include Oleander leaves burnt in the same way as the feathers. Hilton-Simpson already tried to find a scientific reason the procedure and commented: "*Oleander leaves certainly contain volatile oil, so the in this "cure" there is a substratum of reason which is possibly unknown to the Shawia who employed it.*" The anthropologist also mentioned some other medicinal plants presumably used against a more rational background. These include a powdered herb called Noonkha used to treat sore throats. It was determined by botanists at Kew Gardens London as *Ptychosis atlantica* (= *Ammoides atlantica*, Kew Archives Directors Correspondence 180/140), a plant containing an antibacterial essential oil (Laouer et al. 2008) thus being effective to some extent.

2.3.2. Between history and pharmacology

Hilton-Simpson spent several years in the first decades of the 19th century (interrupted by WWI) living among the Berbers leading to friendship and a considerable bond of trust between him and the natives. This enabled him to record medicinal practices to a large extent, firstly summarized in his PhD thesis "Medicine among the Berbers of the Aurès" (Hilton-Simpson 1914). It is interesting to note that Hilton-Simpson followed a truly medicohistorical approach and also intended to provide information useful for pharmacological research: "*The objective of this thesis, therefore, from the point of view of history of medicine, is to examine such data as I have been able to collect in the Aurès in an attempt to determine whether the medicine practised there to-day by the Shawia is more likely to be indigenous or to be the art of the Greeks as practised by the mediaeval Arabs which, in a more or less decadent form, has followed the Islamic faith into the fastnesses of the Aurès and there persisted despite the modern civilization which is spreading over so much in Algeria to-day; while it is hoped that a detailed description of some of the materia medica used by the Shawia and their methods of employing it may even be of some interest of experimental pharmacologists as well as to the student of the history of medicine*" (Hilton-Simpson 1914, pp. 3-4). This expectation is also expressed in a letter, Hilton-Simpson wrote to Kew Gardens, London May 15, 1913, where he used to send

Table 1: Plant species reported as medicinally used by Hilton-Simpson

Name	Plant part	Indications given	PubMed entries (Jan 2016)	
Peganum harmala	Whole plant	Cough Syphilis; Boneaches Kidneys; Laxative	172	Significant antitussive, expectorant, and bronchodilating activities of drug and components (Liu et al. 2015a, b) Several properties reported (Mina et al. 2015; Moloudizargari et al. 2013)
	Seeds	Purge: Pain in limbs [wound dressing, headache][a]		
Colocynth (*Citrullus colocynthis*)	Fruit	Haemorrhoids Boils, very strong purge, rheumatism, Chest abscess, Toothache [venereal disorders, purulent boils]	120	Well known as laxative Wide range of confirmed medicinal uses, narrow therapeutic index (Hussain et al. 2014; Rahimi et al. 2012)
Thapsia garganica	Root	Rheumatism, Itch, Warts [Laxative, bronchitis (extern.), Skin diseases, abscesses][b, c]	31	Cytotoxic constituents, particularly against prostate cancer cells (Doan et al. 2015; Andersen et al. 2015)
Ruta graveolens	Leave	Black patches on face [melanodermia]	221	Provokes photodermatitis, prevention of "evil spells" (Wessner et al. 1999)
	Leave and Seed	Biliousness [spleen disorders]		
Artemisia alba	Flowers	Colic [herb distillate said to cure in 5 min]	7	Anti-inflammatory effects (Strzelcka et al. 2005)
	Burnt ashes	"cold in head"		
	Infusion	Worms: Stomach chill		
	[powdered pant boiled in milk]	[suppurated wounds]		
Juniperus phoenicea	Berries	Lung coughs	38	Antioxidant and antimicrobial activities of essential oil (Fouad et al. 2011; Medini et al. 2011)
	Berries and pitch	Wound dressing		
	Leaves	Would dressing [snuff of powdered leaves against nose bleeding]		
Tamarix gallica	Leaves	Wound dressing, Sores, Lice	22	Antioxidant, antimicrobial (Ksouri et al. 2009) Cytotoxic against colon carcinoma cells (Boulaaba et al. 2013) Not suitable as a host for moths (Calvo et al. 2010)
	Burnt leaves	Itch		
	Leaves, infusion	Inflamed swellings, Eczema, Itch, Wounds, [affections of spleen]		
Solanum nigrum	Leaves	Stops bleeding Liver and stomach Rheumatism (poultice) Inflammation (cold poultice), [itch, acne]	343	antitumorigenic, antioxidant, anti-inflammatory, hepatoprotective, diuretic, and antipyretic (Jain et al 2011)
	[fluid from the capsules]	Eye inflammation		
Globularia alypum	Whole plant decoction	Syphilis	22	Antioxidant (Es-Safi et al. 2005), antituberculosis (Khlifi et al. 2011), hypoglycemic (Skim et al. 1999)
	Roots	Syphilis		
	Flowers	Dressing		
	Dried leaves	Dressing[d, e]		
Hyoscyamus albus	Seeds	Headache, Soporific	18	Rarely used as narcotic (Dafni and Yaniz 1994)
	Leaves (with linseed)	Pains of chill and of rheumatism		
	[seeds]	[anesthetic]		
Juncus maritimus	Roots	Gonorrhoea stricture	28	No therapeutic reports
Teucrium polium	Powdered plant	Wound dressing [flatulence]	109	T. p. honey improved wound healing (Alizadeh et al. 2011); broad spectrum of pharmacological effects including antioxidant, anticancer, antiinflammatory, hypoglycemic, hepatoprotective, hypolipidemic, antibacterial and antifungal (Bahramikia and Yazdanparast 2012)
Pergularia tomentosa / *Daemia cordata*	Dry leaves	Purge [cough, not in pregnancy]	8	Cytotoxic and antifungal activity (Mothana et al. 2011; Piacente et al. 2009) Contains cardiac glycosides (Neuwinger 1996)
Plantago major	Leaves	Painful swellings [abscesses]	148	Wound healing (Zubair et al. 2015; Hosein Farzaei et al. 2014); COX-2 inhibition (Stenholm et al. 2013)
Plantago sp.		Snuffed for colds		

Name	Plant part	Indications given	PubMed entries (Jan 2016)	
Rosemarinus [!] officinalis	Leaves decoction	Increase menstruation and urination in men; Stomach chills: liver & spleen, diabetes [flatulence, cough, gonorrhoea in men only, dropsy]	519	Well known medicinal plant Diuretic action confirmed (Haloui et al. 2000), Some hypoglycemic activity (Ramadan et al. 2013; Bakirel et al. 2008)
Capparis spinosa	Dry leaves	Jaundice; Liber: Spleen dusting powder[f]	75	Several activities (Yang et al. 2008)
	Whole plant boiled in oil	Accouchement		
Garlic, wheat and barley	In soup	Cough		
Garlic	With honey	[haemorrhoids]	1074 (*Allium sativum*)	
Barley, pounded onions and vinegar	As a compress	sunstroke		
Litharge		Discharging ear		
Euphorbia lathrys[!]	Seed	Purge, Emetic	43	Laxative action confirmed (Dey 1967) Cytotoxic effects (Man et al. 2012)
Walnut	Shells and sugar: Smoke inhaled	Colds	297 (*Juglans regia*)	
	[Fresh leaves or bark]	[styptic]		
Date stones	Burnt fumigation	Fever [mostly in magical practice]	235 (*Phoenix dactylifera s*pecies) 2 Stones	*P. dactylifera*: great variety of uses, mainly through antioxidant effects (Yasin et al. 2015) Stones rich in procyanidins (Hammouda et al. 2013) and tannins (Hammouda et al. 2014) Uses described are not confirmed (Gruca et al. 2015)
Wild olive	Leaves	Toothache Ulcerated mouth	880 (*Olea europaea*) 237 (leaves)	Oral antimicrobial efficacy (Karygianni et al. 2014)
Pine pitch		Itch	7	
Ptychotis atlantica	Infusion	Flatulence	0	= *Ammoides atlantica* Trad.: Antidiarrheal and antibacterial activity. Strong antibacterial activity of essential oil (Laouer et al. 2008)[b] Strong antiinflammatory activity of butanolic extract (El-Abidine Ababsa et al. 2011), anti-oxidant activity of methanolic extract (El-Abidine Ababsa et al 2013)
Thymus sp.	Leaves	Toothache	362 (*Th. vulgaris*)	Well known medicinal plant in the region (Benarba et al. 2015) and elsewhere, indications given here unusual
	Infusion	Flatulence, Chill of stomach		
Oak	Root, extract	Diarrhoea[g]	359 (*Quercus robur*)	Well known medicinal plant
Saffron	Powdered in rosewater Also: Mixture of salpetre, alum, saffron, eggshell	Cataract (part of surgical procedure) [wound dressing][h]	437 (*Crocus sativus* in general) 7 (eye disorders)	Saffron extract prevented selenite-induced cataract formation in Wistar rats (Makri et al. 2013), antioxidant activity useful in different eye diseases (Shukorova and Babaev 2010)
Nigella sativa	Seeds	Lung coughs [colic, indigestion]	749 (gen.) 3 (cough)	Trad. use confirmed, bronchodilating, antimicrobial, anti-inflammatory and antinociceptive activities (Amin and Hosseinzadeh 2015)
Cuminum cyminum	Seeds, also mixed with *N. sativa*	Lung coughs, colic (infants), live & spleen [purge]	140	Variety of uses (Mnif and Aifa 2015), Lipoxygenase inhibition (Tomy et al. 2014)
Aristolochia	Whole plant	Dressing every wound		Sp. unknown
Asphodel	Extract	Earache [fluid of pricked fresh capsules, with olive oil]	11 (*A. microcarpus*)	Contains antimicrobial arylcoumarins (El-Seedi 2007)
Gallnut	Powdered	Diarrhoea [styptic, fractures, running sores]	16	Tannin contained inhibits CFTR chloride channel, thus being a potential treatment for diarrhoea (Wongsamitkul et al. 2010)
Stinging nettle/jasmin mixed		Gonorrhoea	431 (*Urtica dioica*)	
Thistle	[chewed] Roots, ectracts	Burns & Scalds	485 *(Silybum marianum*)	Sp. not given. Silymarin, the antioxidant component of *Silybum marianum*, protects against burn-induced oxidative skin injury (Toklu et al. 2007)
Erodium botrys	Leaves powdered	Wound dressing[i]	1	Contains non-glycosylated polyphenols (Fecka et al. 2001)
Lavendula [!] multifida	Leaves	Chest coughs	6	Contains essential oil with antifungal activity (Zuzarte et al. 2012)

Name	Plant part	Indications given	PubMed entries (Jan 2016)	
Teucrium bracteatum	Leaves decoction	When stomach rumbles	0	
	Leaves	Dressing, earache, headache, syphilis, ulcerated throat		
Erodium malacoides	Leaves	Colic, with alum, dressing	1	Weak antileishmanial effect (El-On et al. 2009)
Daphne gnidum[!]	Roots	With myrrh and aloes as dressing[k]	21 (*D. gnidium*)	Antimicrobial (stems, Cottiglia et al. 2001) and cytotoxic effects on different cancer cell lines (Chaouki et al. 2015)
Celery	Leaves	Increase urination& menstruation, liver & chills	389 (*Apium graveolens*)	Seeds (and leaves) contain diuretic n-butylphthalide thus lowering blood pressure (Moghadam et al. 2013)
Asuga [!] iva	Dry leaves	With alum, dressing	23 (*Ajuga iva*)	Antidiabetic (Boudjelal et al. 2015)
	Green leaves	Earache[l]		
Locust bean	Roots		89 (*Ceratonia siliqua*)	Liver, burns & scalds, test of women is [.?.]

[]: additional information from Hilton-Simpson (1922)
[a] Boudjelal et al. (2013): antidiabetic, antihypertensive; [b] Chariti et al. (1995): fracture, antirheumatic; [c] Boudjelal et al. (2013): anti-inflammatory, eczema; [d] Chariti et al. (1995): leave: antitussive, vulnerary; [e] Boudjelal et al. (2013): antidiabetic, leishmanicidal, digestive disorders, eczema; [f] Chariti et al. (1995): apéritif, tonic, antirheumatic; [g] Chariti et al. (1995): bark: against hypertension, fruit: stomachic; [h] Chariti et al. (1995): flowers: hepatic disorders; [i] Chariti et al. (1995): Aerial parts: gastrointestinal disorders, against hypertension, vulnerary; [k] Boudjelal et al. (2013): anti-inflammatory; [l] Boudjelal et al. (2013): antidiabetic, antihypertensive, leishmanicidal, digestive disorders, eczema

Table 2: Additional plant list

Name	Uses described in Hilton-Simpson (1922)	PubMed entries (Dec 2015)	Recent investigations and results (examples)
Salsola oppositifolia	-	2	Cytotoxic (Tundis et al. 2008) and ACE-inhibitory (Loizzo et al. 2007) activities
Pergularia tomentosa / Daemia cordata			s. a.
Marrubium supinum	Extract of powdered leaves against inflammation. Chewed leaves ag. toothache. Dried leaves with alum dressing. Leave extract hepatoprotective, spleen disorders[a, b]	0	
Cynoglossum pictum	Infusion of seeds ag. "Colds in the head." Leaves on abscesses and running sores	2 (= *C. creticum*)	Contains pyrrolizidine alkaloids (Asibal et al. 1989)
Sonchus maritimus	Against eye inflammation Chest coughs with cinnamon	(1)	
Pimpinella sp.	Dropsy		
Nasturtium officinale	Dropsy	69	Strong anti-inflammatory activity (Sadeghi et al. 2014)
Apium nodiflorum	Fresh leaves as wound dressing	5	Antimicrobial activity of phenylpropanoids (Maxia et al. 2012)
Teucrium polium			s.a.
Veronica anagallis[-aquatica]	-	5	Contains antinociceptive and anti-inflammatory iridoid glycosides (Küpeli et al. 2005)
Rosmarinus tournefortii	Sesam oil ext ract against earache in children	2	Antibacterial activity of essential oil (Bendedouche et al. 2011)
Ruta montana	Aq. leave extract mixed with olive oil (1:1) against acne	7	Essential oil with antifungal (Hammami et al. 2015) and anti-oxidant (Kambouche et al. 2008) effects
Erodium gutatum[!]	Dried powdered leaves as wound dressing[c]	0	
Deverra scoparia	Fumigation against acne	2	Contains acaricidal essential oil (Attia et al. 2011)
Capparis spinosa			s.a.
Thymelaea (Passerina) hirsuta	Powdered leaves and flowers in vinegar as wound dressing and against abscesses Laxative	13	Antihyperglycemic (Abid et al. 2014) and anti-inflammatory (Azza and Oudghiri 2015) activities
Echinops spinosus	Root ash mixed with cedar pitch on large boils	3	Good anti-inflammatory activity (Rimbau et al. 1999)
Zizyphus lotus	Pounded fresh soft red root ag. caratact. Root infusion mixed with *Rubia tinctorum* extract ag. Liver and spleen dis. Dried fruits ag. Diarrhoea. Root extract ag. dropsy.[d]	17	Aq. root bark extract anti-inflammatory and analgesic (Borgi et al. 2007) Anti-spasmodic effects explain the use in gastro-intestinal diseases (Borgi and Chouchane 2009)

Name	Uses described in Hilton-Simpson (1922)	PubMed entries (Dec 2015)	Recent investigations and results (examples)
Genista spartioides / Retama monosperma	Leave extract (internally) ag. boils Prevention of hydrophobia (rabies)	6 (R. m.)	Anti-inflammatory effect of aq. extract (González-Mauraza et al. 2014)
Eryngium campestre	Fresh root ag. receding gums	16	Several traditional uses including toothache reported (Belda et al. 20120) Proven anti-inflammatory and antinociceptive activity (Küpeli et al. 2006)
Ajuga iva			s.a.
Anabasis articulata	Ash of whole plant on running sores	10	Anti-inflammatory activity (Abdallah et al. 2014)
Foeniculum vulgare	"Cleaning" the liver Diarrhoea	251 (+ liver = 14)	Hepatoprotective effect reported (Ozbek et al. 2003) Some efficacy against *C. jejuni* (Cwikla et al. 2010)

[a] Hendel et al. (2012): Aerial parts, leave: Fever, otitis, slimming, hypertension, eczema; [b] Boudjelal et al. (2013): Aerial parts antihyertensive; [c] Chariti et al. (2006): Used against gastro-intestinal disorders ; [d] Boudjelal et al. (2013): Leaves: Anti-inflammatory, wound healing, eczema

specimens for botanical identification to: "*I am now going to try to get their real medicinal value ascertained, because I do not believe that Algerian native medicine consists entirely in 'faith' cures*" (Kew Archives, Director's correspondence 180/142).

Bearing this in mind, in 1919, Hilton-Simpson prepared a list of Algerian plant species used medicinally and doubtlessly identified at Kew Gardens, along with their indications (Archive of the Pitt-Rivers-Museum, Oxford, Box Melville William Hilton-Simpson, document F). This was intended for Professor James Andrew Gunn (1882-1958) called "father of the British Pharmacological Society" (J.H.G. 1959). It is unknown, if and what investigations Gunn initiated, but the list may serve here as a starting point for comparison of uses recorded by Hilton-Simpson and state-of-the-art pharmacological knowledge. Plant names, parts and indications as given in the original document are listed in Table 1. Entries are enriched by more extended descriptions given in a book, Hilton-Simpson wrote in 1922 as a summary of his medical experiences in Algeria (Hilton-Simpson 1922). Besides, the number of PubMed entries is given as a rough estimation of the degree of investigation as well as some examples of recent study results in order to judge the potential left for phytopharmaceutical investigations. A second document called "Medicinal Plants 1919-1920" seems to be an addendum, but, unfortunately, does not give indications. These plants are nevertheless listed the same way in Table 2.

2.3. Interpretation

The list in Table 1 gives 44 medicinal plants clearly identified; there are some other entries concerning minerals not further considered here. Table 2 lists another 19 species. In general it is obvious that Hilton-Simpson lists some very well-known medicinal plants and that most of the species are investigated quite well. It is interesting to note that some indications given seem strange at first glance, but could nevertheless be confirmed in recent studies. This includes the use of powdered saffron (*Crocus sativus*) as part of a surgical procedure to heal cataract. In fact it has been proven that saffron extract is able to prevent cataract formation in an animal model (Makri et al. 2013). Gallnuts, which have been used against diarrhoea, contain a tannin able to inhibit a chloride channel partly explaining this activity (Wongsamitkul et al. 2010). *Peganum harmala* used against cough has proven antitussive, expectorant and bronchodilating activities (Liu et al. 2015) like *Nigella sativa* seeds (Amin et al. 2015). Chewed thistle root which is recommended for the treatment of burns and scalds, has recently shown protection against burn-induced skin-injury (Toklu et al. 2007). Many plant parts used in wound treatment proved some antimicrobial activity potentially helpful in dressings. An unusual indication is given for the well-known *Ruta graveolens* leaves used against "black patches on face". Wesner et al. (1999) confirmed this use ("protection against evil spells") and could show that the plant may cause photodermatitis. These examples again show that ethnopharmacological reports may exert some reliability which makes it worth to systematically investigate the rationale behind traditional uses. Observations made by Hilton-Simpson, who clearly saw this potential himself, may also been treated in this sense. Although the medicinal plants listed by Hilton-Simpson are investigated comparatively well, there are some species awaiting further research. Suggestions include the following species:

Marrubium supinum for example is described quite extensively against inflammation of the eye (extract of pounded leaves, Hilton-Simpson 1922, p. 55), as a cure against toothache (chewing of fresh-bruised leaves, p. 64), as wound dressing (dried powdered leaves, p. 66), for protection of the liver (extract obtained by pounding fresh leaves, p. 71), and against "splenic troubles" and indigestion (infusion of male [!] leaves). Ethnopharmacological relevance is independently reported by two other research groups, i.e. Hendel et al. (2012) referring to fever, otitis, slimming, hypertension and eczema as well as Boudjelal et al. (2013) who give hypertension as indication for an infusion of the aerial parts. So far there are no pharmacological studies with this species. Thus, it is strongly suggested to test leave extracts e.g. in models of inflammation, pain, or hypertension.

Cynoglossum pictum (= *C. creticum*) is said to cure "colds in the head" ("a small coffee-cupful of an infusion of the seeds", Hilton-Simpson 1922, p. 75), against purulent boils and running sores (covered by a fresh leave, pp. 86, 92). The species has not been investigated pharmacologically but contains pyrrolizidine alkaloids (Asibal et al. 1989).

Sonchus maritimus is said to "draw inflammation out of the eye" (crushed leaves, Hilton-Simpson 1922, p. 55), and was used against cough (infusion of pounded leaves, in combination with cinnamon, p. 75), and abscesses ("painful swelling", dried plant mixed with milk and flour, p. 87). An older study found flavonoids contained in the plant (Giner et al. 1993), another one saponins, tannins and alkaloids instead (Fazly Bazzaz et al. 1997); pharmacological investigations are missing.

Dried and powdered leaves of *Erodium guttatum* are said to be used as a wound dressing (Hilton-Simpson 1922, p. 66), other sources report use against gastrointestinal disorders (Cheriti at al. 2006). A related species, *Erodium botrys*, is also known for wound healing and has even been called "mother of the wound" (Hilton-Simpson 1922, p. 66). There is only one phytochemical study of *Erodium* species affording six polyphenolic compounds, but no pharmacological investigation.

Tamarix gallica is reported to be useful against lice; investigations show that the plant is not a useful host for lappet moths (Calvo et al. 2010), additionally, it has cytotoxic (Boulaba et al. 2013) and antmicrobial activities (Ksouri et al. 2009). Thus, an activity against lice seems possible as well.

3. Discussion

As has been done for the British botanist Berthold Seemann (Helmstädter 2015), the writings of the anthropologist Melville William Hilton-Simpson were screened for useful information about the traditional uses of medicinal plants. More than Seemann, who was devoted to botany and recorded medicinal plant uses only now and then, therapeutic practices were among the main interest of Hilton-Simpson who published and communicated intensively on that subject. In contrast to Seemann, who worked in the mid-19th century, when pharmacology had not emerged as a science, he was aware of the possibilities given by collecting traditional medicinal plants and submitting them to pharmacological research. From a today's perspective, however, some of the uses observed just recently proved to have a more or less sound rational background. This is again a clear sign of some reliability of historical records and holds promise for investigations into plant species not yet studied in detail. Some suggestions are made above. Hilton-Simpson's observations were mainly made in the Aurès region of Algeria, where medical knowledge has, "*unlike Western pharmacopoeias [...] not been written down but has continued to the present day by passing from generation to generation among healers and herbalists through oral transmission of the medical art*" (Boudjelal et al. 2013). It is, therefore, important to record traditional knowledge, e.g. by surveys among traditional healers, but screening historical records like those passed down by Hilton-Simpson seem likewise important. In this context it seems true for Hilton-Simpson's writings what Anagnostou (2015) suggested for the records of Jesuit missionaries in Asia being considered a contemporary inventory of the plants used in a particular region centuries ago. In fact, the study presented here, on one hand, revealed some traditional uses not reported in recent ethnopharmacological surveys of the region, which, by the way, completely neglect Hilton-Simpson's contributions (Cheriti et al, 1995, 2006; Fazly Bazzaz et al. 1997; Hendel 2010; Boudjelal et al. 2013). They are also not mentioned in a recent study on traditional Arab medicinal plants uses for wound healing (Müller 2013). On the other hand, some plant uses reported by Hilton-Simpson in the early 20th century were confirmed by recent field work.

Making traditional knowledge available for phytopharmacological research has already been a vision of the anthropologist Hilton-Simpson and a great deal of efforts have in fact been made up to the present day. Some traditional uses could be confirmed, others don't. Unfortunately, research has not been guided by traditional knowledge which, most probably, would have been a more purposive approach. Hilton-Simpson, however, also had a medico-historical viewpoint trying to explore the tradition of phytopharmaceutical knowledge among the Berbers. The question about Greek influences on Algerian healing tradition raised at the beginning of his PhD thesis can clearly be answered in a way that Greek traditions in fact reached the Berbers in Northern Africa. Many plant species have already been known as useful in ancient Greece, with the most prominent examples *Ruta graveolens* and *R. montana* (Pollio et al. 2008). There are also *Solanum nigrum*, *Rosmarinus officinalis*, *Crocus sativus, Nigella sativa* and many others. Hilton-Simpson himself gave the following answer to the question raised in his PhD thesis in a letter written to Kew Gardens London (Kew Archives, Director's correspondence 182/36; July 4, 1920): "*We obtained really a lot of notes on Algerian medicine, which appears to be that of the 13th century Arabs, so, indirectly Greek, and we hope that these notes when published may prove some slight addition to the knowledge of the history of medicine the professor of Pharmacology at Oxford has found among them some details of the employment of drugs which gives him food for experiment*". It is unknown, if the cooperation with the pharmacologist J. A. Gunn, who is, most probably, addressed in this letter, provided any useful results. In seems, however, that Hilton-Simpson's observations might still feed pharmacological research in the 21st century, some concrete proposals have been made above.

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