

## TRABAJOS ORIGINALES

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# A polyherbal remedy used for respiratory affections in Moroccan traditional medicine

*Un remedio a base de plantas para las afecciones respiratorias en la medicina tradicional marroquí*

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### RESUMEN

Un estudio etnobotánico llevado a cabo en la región de Ksar Lakbir con el objetivo de catalogar el conocimiento popular en materia de plantas medicinales y preparaciones tradicionales nos permitió conocer la existencia de un remedio tradicional para el tratamiento de afecciones respiratorias. La preparación, compuesta de 70 especies de 37 familias.

PALABRAS CLAVE: Etnobotánica, Marruecos, afecciones respiratorias

### ABSTRACT

An ethnobotanical survey undertaken in the Rif, northern region of Morocco since 1992 revealed an original herbal remedy used in Laksar Lakbir district for respiratory ailments (tuberculosis, bronchitis, asthma, pneumonia, cough and colds) made up of 70 plant species from 37 botanical families.

KEY WORDS: Herbal remedies, respiratory ailments, Morocco.

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### INTRODUCTION

History of the north part of Morocco commonly known as Rif was synonymous of marginalization and lack of economical essential structure. Autochthonous population is berber and their economic activity is based on agriculture and livestock. This activity is complemented by fishing and *Cannabis* crops production.

At a time a small number of ethnobotanical reports was published about this zone. A survey in different Rifian areas (North of Morocco, from Oujda to Tanger) has been undertaken by authors to collect information about their medicinal flora. So far around 500 plant specimen have been collected. Results were partly published, concerning medicinal plants

used in Bouhmed district and Ksar Lakbir city (Merzouki et al., 1999; Merzouki et al., 1997b). Different aspects of Rifian *Cannabis* crops were also studied (Merzouki y Molero, 1997a; Merzouki et al., 1996 a; 1996b; Merzouki y Molero, 1995).

In the Rif traditional medicine many species were used for treating common colds, for asthma a particular folk treatment was practiced in Ouazzane district with *Trigonella foenum-graecum* and *Pistacia lentiscus*.

The present work carried out in Ksar Lakbir district, deals with an original herbal remedy of seventy plant species for treating respiratory ailments

## METHODOLOGY

### *Area of study*

Ethnobotanical study was carried out respectively in the district of Jamâat Swaken of Quiadat- Souk Ettolba, situated approximatively 20 Km north of Ksar Lakbir city and in Kabilat ahl Srif and Jamâat Merkad Eddbab of Quiadat Tattouft 15 Km east of Ksar Lakbir city.

With a local population around 5000 persons, data concerning uses of medicinal plants were gathered from direct interviews with informants. Information was obtained through general conversations with 75 group of persons (265 persons, 187 men and 80 women) without asking direct questions. Informants were not scientifically literate and were born in the region. The majority of informants knew an herbal remedy of quack woman (**Haja Rahma**) for treating respiratory ailments. The secret of this preparation belongs to her for more than thirty five years, from the (Aâchab) herbalist of Souss to cure his son who suffered a Tuberculosis. (Souss is a south region of Morrocco which is reputed by their herbalists).

### *Botanical composition of an herbal remedy*

A voucher herbarium specimen were prepared and deposited in the department of Botany, Faculty of Pharmacy, University of Granada. Plant nomenclature was established accordingly to Flore de l'Afrique du Nord (Maire, 1952-1980) Nouvelle Flore de l'Algerie (Quezel and Santa., 1962), Flora Iberica Castroviejo et al., 1986-1997), Flora Europea (Tutin et al., 1964-1980), and Medicinal Plants of North Africa (Boulos, 1983).

Plants were presented with botanical and vernacular names. Ethnobotanical comparation with a bibliographical citation of species was established through consultation of Spanish

ethnoboanical works (Gonzalez Tejero, 1989; Martinez Lirola, 1993; Mulet Pascual, 1991; Perez de Paz y Medina Medina, 1988), North African medicinal plants (Boulos, 1983 ) Arabian medicinal plants (Ghazanfar, 1994), medicinal plants of the Bible (Duke , 1983), Handbook of medicinal plants (Kapoor, 1990) and phytotochemecodatabase (Beckstrom-Sternberg and Duke, 1987)

### *Mode of preparation*

It's difficult to obtain the secret of traditional phytotherapeutic preparation in Morocco, but from information collected during our investigation we can conclude that approximately four hundred grams plant material were used in this herbal preparation, fifteen litres of water was added in (Borma) a copper pot and placed on a low fire.

Part of plants used were: RO: Root; ST: Stem; LE: Leaf; AP: Aerial part; INF: Inflorescence; SD: Seed; FR: Fruit; FRO: Frond; ST-BR: Stem Bark, BU: Bulb, TH: thalle et FR-EP: Fruit Epicarpe; FL: Flower; Rh: Rhyzom.

### *Mode of Administration*

Four litres of filtered decoction were recovered. Administration of the treatment consist in two phases, inhalation and oral:

1- Vapor inhalation: When decoction starts boiling away, patient with head covered on a pot for inhaling vapor.

2- Oral administration: Two daily prises of a coffee cup decoction, first, before breakfast and the second, after dinner.

Treatment period length was variable depending of the affection gravity, from 1 week for treating common colds to four weeks for tuberculosis. During treatment, patient should not eat *citrus* fruits and spicy food.

## RESULTS AND DISCUSSION

Socio-economically, Ksar lakbir district is a poor region, rural people lives in precarious conditions, rarity of sanitary structures makes infectious ailments to be present and very frequents. Epidemiological data of 1992 about tuberculosis in Morocco (Laraqui Hassoni y

Belamallem , 1995 ) reveal that mortality by tuberculosis was around 2.17 for 100000 inhabitants. Incidence of tuberculosis around 30000 cases per year. North-West region of Morocco was the most affected, with 155 cases per 100000 inhabitants. Among sexual prevalence, masculin

sex predomine with 62% in opposit 38% in female sex. In spite of these problems, traditional herbal remedies will continue to be used.

The originality of this herbal remedy resides in the combination of seventy taxa. In Moroccan traditional medicine, polyherbal compositions are quite rare, an exception being represented by **Rass al Hanout** preparation (literally the top of shop) used in Middle East and North of Africa, the Moroccan version of this preparation of thirteen plants was very typical, popularly used in common colds, as aphrodisiac, and for its califacient properties.

The seventy taxa of a respiratory herbal remedy are presented in table 1. The useful plants are distributed among thirty seven families, Angiospermae, thirty three families in which thirteen dicotyledons and three monocotyledons, two pteridophytae, (Hypolepidiaceae and Aspleniaceae), one bryophytae, (Hypnaceae) and one lichen (Parmeliaceae).

*Lamiaceae* predominate with ten species, and constitute 14.3% of the total, followed by *Asteraceae*, *Fabaceae* and *Cistaceae* with five species (7.2%) each, *Liliaceae* four species (5.7%), *Ericaceae* three species (4.3%), *Apiaceae*, *Crassulaceae*, *Lauraceae*, *Rosaceae*, *Urticaceae*, *Zingiberaceae* and *Graminae* two species (2.9%) each and the other twenty four families were represented by one specie (1.4%) each. Plant samples used for preparing the remedy were generally from aerial part.

The majority of species used in this phytotherapeutic preparation were herbaceous or arbustive and constituted a floristic cortege of *Quercus* formation. Part of plants were introduced (*Zingiber officinale*, *Amomum granum-paradisii*, *Cinnomum zeylanicum*, *Piper nigrum*, *Nigella sativa*) and were purchased from local herbalists and cultivated plants like *Zea mays*, *Punica granatum* and *Opuntia ficus indica*.

Spectrum of species activities, show that fourteen species (17.1%) were previously reported with an activity on respiratory ailments (Bronchitis, Tuberculosis, Asthma, Pneumonia, Cough, colds...). Ten species (14.3%) were cited as analgesic, antiseptic, bactericide, refreshing, sedative or tonic; two species (*Cytinus hypocystis* and *Daphne gnidium*) were cited (Beckstrom and Duke, 1987) as antitumoral. The last twenty species (28.6%) were cited without activity on the respiratory organs. Among these plants, seventeen species were not referred like medicinal plants in bibliographical data cited in this work. These plants are: *Anacyclus radiatus*, *Asparagus aphyllus*, *Asplenium billotii*, *Chamaemelum fuscum*, *Cytisus villosus*, *Erica terminalis*, *Erica umbellata*, *Eryngium tricuspidatum*, *Halimium halimifolium*, *Hypnum sp.*, *Ononis fruticosa*, *Origanum elongatum*, *Salix pedicellata*, *Sedum brevifolium*, *Stauracanthus boivinii* and *Teucrium fruticans*, however, *Ammomum granum-paradisii* and *Calycotome villosa* were cited by Beckstrom and Duke (1987) with antitumoral activity and *Urtica pilulifera* was catalogued in Andalucian territory (Gonzalez Tejero, 1989) like emollient, cicatrizant and antiemorrhoides.

This traditional herbal remedy for respiratory ailments was apparently efficient, all informants interviewed claimed improvement of patients with the treatment and they had never listened to any patient complication. High percent of informants confirmed the efficiency of a remedy and the very important fact was the low cost of the treatment.

A combination of seventy plants with an important panoply of chemical compounds, show effective and synergic activity and thus a chemical analysis as well as biological essays with a traditional decoction are worthwhile.

## ACKNOWLEDGEMENTS

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TABLE 1- Species used in the herbal remedy preparation, scientific and vernacular names, parts used, botanical Families and citation references.

| Botanical names & Voucher specimens  | Vernacular names | Family                  | Part used       | Reference citations  |
|--|------------------|-------------------------|-----------------|--|
| <i>Ajuga iva Schreber.</i> (PMR 0126)  | Chandgoura       | <i>Labiatae</i>         | AP              | Analgesic <sup>(8)</sup> , Pectoral <sup>(8)</sup> , Sinusitis <sup>(2)</sup> , cephalagie <sup>(2)</sup><br>Angina <sup>(9)</sup> , Antiseptic <sup>(6,8)</sup> , Antitussive <sup>(10)</sup> , Amygdalitis <sup>(6)</sup> ,<br>Bactericide <sup>(2)</sup> , Bronchitis <sup>(1)</sup> , Pectoral <sup>(1,6,8)</sup> , Tuberculosis <sup>(1,8)</sup> ,<br>Sedative <sup>(6)</sup> |
| <i>Allium cepa L.</i> (PMR 0127)   | Al'Bassla        | <i>Liliaceae</i>        | BU              |  |
| <i>Ammi visnaga (L.) Lam.</i> (PMR 0128)   |                  | Al'Bachnikha            | <i>Apiaceae</i> | AP Antitussive <sup>(5,6)</sup> , Asthma <sup>(8)</sup> , Sedative <sup>(6)</sup>  |
| <i>Amomum granum- paradisi L.</i> (PMR 0129)   | Gouza sahraouiya | <i>Zingiberaceae</i>    | FR              | NC   |
| <i>Anacyclus radiatus Lois.</i> (PMR 0130)   | Hallala          | <i>Asteraceae</i>       | IF              | NC   |
| <i>Arbutus unedo L.</i> (PMR 0131)   | Boukhanou        | <i>Ericaceae</i>        | RO.BA           | Antiseptic <sup>(6)</sup> , Respiratory infections <sup>(4)</sup>  |
| <i>Aristolochia paucinervis Pomel</i> (PMR 0132)   | Barratzam        | <i>Aristolochiaceae</i> | RO              | Stimulant <sup>(6)</sup>   |
| <i>Artemisia herba alba Asso.</i> (PMR 0133)   | Chih lakhrissi   | <i>Asteraceae</i>       | AP              | Antiseptic <sup>(6)</sup> , Bronchitis <sup>(6,9)</sup> , Cold <sup>(9)</sup> , Cough <sup>(9)</sup> Tonic <sup>(6)</sup>  |
| <i>Asparagus aphyllus (L.)</i> (PMR 0134)  | Ziwziw           | <i>Liliaceae</i>        | AP              | NC   |
| <i>Asplenium billottii</i> (PMR 0135)  | Afarsiw          | <i>Aspleniaceae</i>     | FRO             | NC   |
| <i>Calamintha sylvatica Bromf. subsp ascendens (Joerd.)</i><br><i>P.W. Ball</i> (PMR 0136) | Manta            | <i>Labiatae</i>         | AP              | Analgesic <sup>(8)</sup> , Asthma <sup>(8)</sup> , Cold <sup>(4)</sup> , refreshing, Tonic <sup>(6)</sup>  |
| <i>Calycotome villosa L.</i> (PMR 0137)  | Aghraz           | <i>Fabaceae</i>         | FR              | NC [Tumor <sup>(11)</sup> ]  |
| <i>Cannabis sativa L.</i> (PMR 0138)   | Al'Kif           | <i>Cannabaceae</i>      | LE/IF           | Asthma <sup>(5,8)</sup> , Analgesic <sup>(2,5)</sup> , Cough <sup>(2)</sup> , Sedative <sup>(1,2,5,8)</sup> , Pectoral <sup>(5)</sup>  |
| <i>Cerantonia siliqua L.</i> (PMR 0139)  | Salaghout        | <i>Fabaceae</i>         | FR              | Antitussive <sup>(10)</sup> , Asthma <sup>(9)</sup> , Cold <sup>(10)</sup> , Cough <sup>(2,9)</sup> , Pectoral <sup>(2)</sup>  |
| <i>Chamaemelum fuscatum (Brot.) Vasc.</i> (PMR 0140)                                       | Amlil            | <i>Asteraceae</i>       | IF              | NC   |
| <i>Cinnamomom zeylanicum Nees.</i> (PMR 0141)  | Al'Qorfa         | <i>Lauraceae</i>        | ST.BA           | Antiseptic <sup>(8)</sup> , Bactericide <sup>(1,6)</sup> , Pectoral <sup>(8)</sup>   |
| <i>Cistus albidus L.</i> (PMR 0142)  | Tarraklla        | <i>Cistaceae</i>        | AP              | Antitussive <sup>(6)</sup> , Sedative <sup>(6)</sup>   |
| <i>Cistus ladanifer L.</i> (PMR 0143)  | Laftah           | <i>Cistaceae</i>        | AP              | Asthma <sup>(2,6)</sup> , Bronchitis <sup>(1)</sup> , Cold <sup>(5)</sup> , Sedative <sup>(8)</sup>  |
| <i>Cistus salvifolius L.</i> (PMR 0144)  | Achtappa         | <i>Cistaceae</i>        | AP              | Bronchitis <sup>(1)</sup> , Influenza <sup>(5)</sup>   |
| <i>Corrigiola telephiifolia Pourret</i> (PMR 0145)   | Sarghina         | <i>Cariophyllaceae</i>  | RO              | Cold, Coryza, Cough <sup>(2)</sup> , Bronchial affections <sup>(6)</sup> , Stimulant <sup>(6)</sup>  |



|   |                     |              |       |   |
|---|---------------------|--------------|-------|---|
| <i>Crataegus monogyna</i> Jacq. (PMR 0146)  | Admam               | Rosaceae     | FR    | Sedative <sup>(1,2)</sup>   |
| <i>Cynara humilis</i> L. (PMR 0147)   | Timatt              | Asteraceae   | RO    | Tonic <sup>(2)</sup>  |
| <i>Cynara scolymus</i> L.(PMR 0148)   | Khorchoff Al'baldia | Asteraceae   | RO    | Tonic <sup>(1,8)</sup>  |
| <i>Cytinus hypocystis</i> L. (PMR 0149)   | Chaâraâ             | Raflesiaceae | AP    | Refreshing <sup>(8)</sup>   |
| <i>Cytisus villosus</i> (PMR 0150)  | Ar'tham             | Fabaceae     | AP    | NC  |
| <i>Daphne gnidium</i> L (PMR 0151)  | Al mathnan          | Thymeleaceae | AP    | Antiseptic <sup>(4)</sup>   |
| <i>Elymus repens</i> (L.) Could. HC. (PMR 0152)   | Njam labiad         | Gramineae    | AP    | Cough, Sedative <sup>(1)</sup> , Refreshing <sup>(2)</sup>  |
| <i>Erica terminalis</i> Salish. (PMR 0153)  | Lakhnaj             | Ericaceae    | SE    | NC  |
| <i>Erica umbellata</i> Loefl. (PMR 0154)  | Achfoud             | Ericaceae    | AP    | NC  |
| <i>Erodium moschatum</i> (Brum) L'Her. (PMR 0155)   | L'Amchitt           | Geraniaceae  | FR/AP | Gorge infections <sup>(8)</sup>   |
| <i>Eryngium tricuspdatum</i> L. (PMR 0156)  | Boumghizal          | Apiaceae     | RO    | NC  |
| <i>Halimium halimifolium</i> (L.) Willk. Subp. multiflorum (salzm. Ex Dunal) Maire (PMR 0157) | Al'Marz             | Cistaceae    | AP    | NC  |
| <i>Hypnum</i> sp. (PMR 0158)  | Zghab lahjar        | Hypnaceae    | AP    | NC  |
| <i>Juncus acutus</i> L. (PMR 0159)  | Smar d'Lamraj       | Juncaceae    | IF    | Colds <sup>(2,5)</sup> , Cough <sup>(9)</sup> , Respiratory afections <sup>(9,10)</sup>   |
| <i>Laurus nobilis</i> L. (PMR 0160)   | Arrand              | Lauraceae    | SE/LE | Antitussive <sup>(4)</sup> , Cold <sup>(4,5)</sup> , Throat infections <sup>(5)</sup>   |
| <i>Lavandula stoechas</i> L. (PMR 0161)   | Al'Halhal           | Labiatae     | AP    | Asthma <sup>(1)</sup> , Cold <sup>(4)</sup> , Expectorant <sup>(1)</sup> , Throat infection <sup>(4)</sup><br>Pectoral <sup>(1,2)</sup> , Sedative <sup>(8)</sup>   |
| <i>Marrubium</i> spp. L.(PMR 0162)  | Marriwa al horra    | Labiatae     | AP    | Common colds <sup>(10)</sup>  |
| <i>Marrubium vulgare</i> L (PMR 0163)   | Marriwa jrihi       | Labiatae     | AP    | Asthma <sup>(1)</sup> , Bronchitis <sup>(1,4)</sup> , Cold <sup>(1,2,4,10)</sup> , Cough <sup>(1,3)</sup> ,<br>Expectorant <sup>(1,3,6,8)</sup> , Pulmonary troubles <sup>(2)</sup> , Tonic <sup>(3,6)</sup>                      |
| <i>Mentha longifolia</i> (L.) Hudson (PMR 0164)   | Mchichtro           | Labiatae     | AP    | Antiseptic <sup>(1)</sup> , Cold <sup>(1,9)</sup> , Tonic <sup>(8)</sup>  |
| <i>Mentha spicata</i> L.(PMR 0165)  | Fliyou              | Labiatae     | AP    | Bronchitis <sup>(1)</sup> , Refreshing <sup>(2,4)</sup>   |
| <i>Myrtus communis</i> L. (PMR 0166)  | Arrayhan            | Myrtaceae    | AP    | Antiseptic <sup>(1,8)</sup> , Asthma <sup>(2,5,9)</sup> , Bronchitis <sup>(1,9)</sup> , Coughs <sup>(3)</sup> , Pectoral <sup>(1)</sup> ,<br>Respiratory ailments <sup>(2)</sup> , Sedative <sup>(1)</sup> , Tonic <sup>(1)</sup> |

|   |                      |                        |       |  |
|---|----------------------|------------------------|-------|--|
| <i>Nigella sativa</i> L. (PMR 0167)                         | Assanouj             | <i>Ranunculaceae</i>   | SE    | Asthma <sup>(1,2,3,7,9)</sup> , Bronchitis <sup>(1,7,9)</sup> , Cough <sup>(1,2,7,9)</sup> , Decongestant <sup>(3)</sup> , Respiratory ailments <sup>(2)</sup>   |
| <i>Olea europea</i> var. <i>sylvestris</i> Brot. (PMR 0168) | Al'Barri             | <i>Oleaceae</i>        | LE    | Analgesic <sup>(6)</sup> , Antiseptic <sup>(1,6)</sup> , Cold <sup>(4,10)</sup> , Cough <sup>(2,5)</sup> , Gorge inflammation <sup>(8)</sup> , Pneumonia <sup>(4)</sup> , Sedative, Tonic <sup>(1)</sup>   |
| <i>Ononis fruticosa</i> L. (PMR 0169)                       | Zriraq               | <i>Fabaceae</i>        | AP    | NC   |
| <i>Opuntia ficus indica</i> (L.) Miller (PMR 0170)          | Nouar Al'handi       | <i>Cactaceae</i>       | FL    | Analgesic <sup>(4)</sup> , Antiseptic <sup>(6)</sup> , Antitussive <sup>(4,10)</sup> , Asthma <sup>(1)</sup> , Cold <sup>(4,6,10)</sup> , Decongestant <sup>(1)</sup> Pectoral <sup>(4,8)</sup> , respiratory ailments <sup>(10)</sup>   |
| <i>Origanum</i> cf. <i>elongatum</i> L.(PMR 0171)           | Azâatar              | <i>Labiatae</i>        | AP    | NC   |
| <i>Papaver rhoeas</i> L. (PMR 0172)                         | Ballaâman            | <i>Papaveraceae</i>    | AP    | Analgesic <sup>(6,8)</sup> , Antitussive <sup>(1,4,6,8)</sup> , Asthma <sup>(6)</sup> , Bronchial affections <sup>(8)</sup> , Cold <sup>(1)</sup> , Cough <sup>(1,2,4)</sup> , Expectorant <sup>(1,2)</sup> , Pectoral <sup>(1,2,8)</sup> , Sedative <sup>(8)</sup>                            |
| <i>Parietaria mauritanica</i> Durieu. (PMR 0173)            | Al'Hourrika L'malssa | <i>Urticaceae</i>      | AP    | NC [Diuretic <sup>(1)</sup> ]  |
| <i>Parmelia caperata</i> (PMR 0174)                         | Tafoura Al'baida     | <i>Parmeliaceae</i>    | TH    | Cold <sup>(1)</sup> , Tuberculosis <sup>(1)</sup>  |
| <i>Phlomis purpurea</i> L. (PMR 0175)                       | Wadnin Al'Hallouf    | <i>Labiatae</i>        | AP    | Antitussive <sup>(10)</sup>  |
| <i>Piper nigrum</i> L. (PMR 0176)                           | Labzar labiad        | <i>Piperaceae</i>      | SE    | Antiseptic <sup>(7)</sup> , Bactericide <sup>(1)</sup> , Cough <sup>(2)</sup> , Tonic <sup>(1,2,3)</sup>   |
| <i>Pistacia lentiscus</i> L. (PMR 0177)                     | Adro                 | <i>Pistaciaceae</i>    | RE/LE | Analgesic <sup>(1)</sup> , Antiseptic <sup>(6)</sup> , Antitussive <sup>(1,2)</sup> , Cough <sup>(1,9)</sup> , Expectorant <sup>(1,2,6)</sup> , Tuberculosis <sup>(8)</sup>  |
| <i>Polygonum aviculare</i> L.(PMR 0178)                     | Awadhmo              | <i>Polygonaceae</i>    | RO    | Asthm <sup>(1)</sup> , Bronchitis, Cold <sup>(1)</sup> , Tonic <sup>(1)</sup> , Pneumonia <sup>(10)</sup> , Refreshing <sup>(8)</sup>  |
| <i>Pteridium aquilinum</i> (L.) Kuhn.(PMR 0179)             | Farsiw               | <i>Hypolepidiaceae</i> | FRO   | Bactericide <sup>(1)</sup> , Sedative <sup>(1)</sup> , Tonic <sup>(1)</sup>  |
| <i>Punica granatum</i> L. (PMR 0180)                        | Arroumman            | <i>Punicaceae</i>      | EP.FR | Amygdalitis <sup>(1)</sup> , Analgesic <sup>(10)</sup> , Antitussive <sup>(10)</sup> , Asthma <sup>(1)</sup> , Bactericide <sup>(1)</sup> , Bronchitis <sup>(1,7,9)</sup> , Cough <sup>(1)</sup> , Pectoral <sup>(2)</sup> , refreshing <sup>(4,8)</sup> , Respiratory Troubles <sup>(2)</sup> |
| <i>Quercus suber</i> L.(PMR 0181)                           | Dabgha Al'hayya      | <i>Fagaceae</i>        | ST.BA | Antiseptic <sup>(6)</sup>  |
| <i>Rubia peregrina</i> L. (PMR 0182)                        | Al'Sisqa             | <i>Rubiaceae</i>       | AP    | Slightly tonic <sup>(2)</sup>  |

|  |                   |                |          |   |
|--|-------------------|----------------|----------|---|
| <i>Rubus ulmifolius</i> Schott. (PMR 0183)                                 | Al'oulliq         | Rosaceae       | RO       | Analgesic <sup>(6)</sup> , Antiseptic <sup>(6)</sup> , Antitussive <sup>(6)</sup> , Cold <sup>(4)</sup> , Refreshing <sup>(6)</sup>   |
| <i>Salix pedicellata</i> Desf. (PMR 0184)                                  | Assafsaf          | Salicaceae     | AP       | NC  |
| <i>Sedum brevifolium</i> D.C. (PMR 0185)                                   | Rbiâa d'lahjar    | Crassulaceae   | AP       | NC  |
| <i>Smilax aspera</i> L. (PMR 0186)   | Ayzam             | Liliaceae      | FR       | Analgesic <sup>(6)</sup> , Cold <sup>(10)</sup>   |
| <i>Stauracanthus boivinii</i> (Webb) Samp. var. <i>tazensis</i> (PMR 0187) |                   | Aghriz l'hajri | Fabaceae | AP NC   |
| <i>Teucrium fruticans</i> L. (PMR 0188)                                    | Sfisfa            | Labiatae       | AP       | NC  |
| <i>Trigonella foenum graecum</i> L. (PMR 0189)                             | Al'hulba          | Fabaceae       | SE       | Asthma <sup>(5)</sup> , Bronchitis <sup>(3)</sup> , Broncho-pulmonary affections <sup>(2)</sup> , Cough <sup>(3)</sup> , Tonic <sup>(1)</sup>   |
| <i>Umbilicus rupestris</i> (Salisb.) Dandy (PMR 0190)                      | Zlifat Mariam     | Crassulaceae   | AP       | NC [Emollient, Cicatrizant, Emorrhoid <sup>(4)</sup> ]  |
| <i>Urtica pilulifera</i> L. (PMR 0191)                                     | Harriga d'Alghaba | Urticaceae     | AP       | Asthma <sup>(1)</sup> , Bronchitis <sup>(1)</sup> , Cough <sup>(1)</sup> , Tonic <sup>(1)</sup>   |
| <i>Vitis vinifera</i> L. (PMR 0192)  | Addalia           | Vitaceae       | LE       | Antiseptic <sup>(6)</sup> , bronchitis <sup>(3)</sup> , Cough <sup>(3)</sup> , Antitussive <sup>(8)</sup> , <b>Expectorant</b> , Pectoral <sup>(8)</sup> , Refreshing <sup>(1,8)</sup> , Tonic <sup>(1,8)</sup> , Tuberculosis <sup>(2,9)</sup> |
| <i>Zea mays</i> L. (PMR 0193)  | Attourkiya        | Gramineae      | FR       | Analgesic <sup>(1,10)</sup> , Antiseptic <sup>(1)</sup> , Stimulant <sup>(1)</sup>  |
| <i>Zingiber officinale</i> Rsc. (PMR 0194)                                 | Skinjbir          | Zingiberaceae  | RH       | Asthma <sup>(1,7,9)</sup> , Bronchitis <sup>(1,3)</sup> , Cough <sup>(3,7)</sup> , Expectorant <sup>(1)</sup> , Pectoral diseases <sup>(2)</sup> , Respiratory system <sup>(2)</sup>  |

<sup>(1)</sup> Beckstrom-Sternberg S. M. and J. A. Duke, (1997); <sup>(2)</sup>Boulos L. (1983); <sup>(3)</sup>Ghazanfar S. A., (1994); <sup>(4)</sup>González Tejero M. R., (1989); <sup>(5)</sup>Merzouki A et al., (1997); <sup>(6)</sup>Mulet Pascual L., (1991); <sup>(7)</sup> Kapoor L. D., (1990); <sup>(8)</sup>Pérez de Paz L. and Medina Medina I, (1988); <sup>(9)</sup>Duke J. A., (1983); <sup>(10)</sup>Martínez Lirola M. J. et al., (1993); NC: No cited.

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