

Kingdom of Saudi Arabia
Ministry of Higher Education
King Faisal University
Deanship of Scientific
Research



:

.. :

.. :

/

.

(/ -)



(Digitalis

(Atropa belladonna)

purpurea)

(Aconitum

–

– *napellus*)

(Papaver somniferum)

(Ammi visnaga)

(Ammi majus)

(Cassia senna)

(*Artemisia cina*)

" "

(*Chrysanthemum cinerariifolium*)

:

--

(Glycosides) -

:

.

.

:

.

:

:

:

(Alkaloids) -

(Essential oils) -

.

-

-

.

-

.

.

.

.

.

.

.

- -

():

:

()

(-)
(*Rhazya stricta*)

(-)
(*Avicennia marina*)

(Forsskal, 1775)

(Schweinfurth, 1912)

" (Delpers, 1889)
 (Blatter, 1936)
 (Thomas)
 (Philby)
 (Vesey-fitzgerald, 1955, 1957a,b)
 (De Marco (Zohary, 1957)
 and Dinelli, 1974)
 Salsola sp.
 (Migahid and Hammouda, 1978)
 .Zygophyllum (Hadidi, 1977)
 (Abdulatif, 1979)
 .(Fayed and Zayed, 1989)
 .(Chaudhary and Howaishel, 1980)
 (Field, 1981)
 (Labiatae) (Hedge, 1982)
 (Vincett, 1984)
 (Boulos, 1985)

.Ceropegia (Chaudhary and Lavranos, 1985)
()
(Chaudhary, 1985) .(Collenette, 1985)
(Chaudhary and Akrm, Heliotropium
(*Chenopodiaceae*) *Salsola* L. 1987)

.(Abdulatif, 1979)

.(Chaudary and Akrm, 1978)
(Fayed and Zayed, 1989)
(Mandaville, 1990)

(Convolvulaceae) (Al-Farhan, 1994)
(Al-Farhan, 1991 and
.1993)

Cuscuta (Al-Farhan, 1994)
(Al-Turki and

Chenopodium Ghafoor, 1996)
(Al-Turki, 1996)

(Ageel, et al., 1987 and Al-Yahya et
.al., 1990)

(Ahmed
et al., 1983 and Al-Yahya et al., 1990)

.(Kaneko and Kensuke, 1967)

(Adam, 1998)

.(Ageel, et al., 1987)

(Chopra et al.,

.1986 and Leporatti et al., 1996)

.(Ageel, et al., 19887 and Adam, 1998)

(Watt and

.Brankwijk, 1962 and Bakhieta and Adam, 1995)

(El-Naggar,

(Adam and Bakhieta, 1995) .et al., 1989)

%

(- -)

.(Banthrope et al., 1981)

% - % , - ,

: % Carvone

. (Lawrence, 1981, Lawrence , 1985)

(Banthrope, et

.al., 1981)

.(Soliman et al., 1998)

. % - Menthol % ,
 Menthyl acetate Menthone
 Cadenine Cineole
 % .Limonene
 .(Lawrence, 1981, Lawrence, 1985, Stojanova et al., 2000) :
 .Aromatic Stimulant Carminative
 .(Banthrope et al., 1981)

.(Soliman et al., 1998)

) C³
) C⁶ (C³
 .(C³
 C⁶

(Lincon and Murray,

.1978, Croteau, 1991)

C⁶ C³

.(Croteau, 1991, Kjonaas and Croteau, 1983)

()

- - - -

(pH)

(Piper,1955)

(Page et al., 1982)

(Rhoades, 1982)

) Jenway

(Sabrah et al., 1992)

EC

(

(Cottenie,1980)

(Mentha micophylla L.)

/



(Mentha longifolia L.)

:

:

/



(Ocimum basilicum L.)



Leaf area meter

Steam

distillation

:

° / / /
/

(SAS Institute, 1990)

%

(LSD)

.(Steel and Torrie, 1980)

/	/	/	/	/	/	
/	/	/	/	/	/	
/	/	/	/	/	/	
/	/	/	/	/	/	
/	/	/	/	/	/	
/	/	/	/	/	/	
/	/	/	/	/	/	

/

/

- -

()				
-	-	-	-	
,	,	,	,	
,	,	,		/
,	,	,	,	%
,	,	,	,	%
,	,	,	,	%
,	,	,	,	/
,	,	,	,	%
,	,	,	,	/

()				
-	-	-	-	
,	,	,	,	
,	,	,	,	/
,	,	,	,	%
,	,	,	,	%
,	,	,	,	%
,	,	,	,	/
,	,	,	,	%
,	,	,	,	/

()				
-	-	-	-	
,	,	,	,	
,	,	,	,	/
,	,	,	,	%
,	,	,	,	%
,	,	,	,	%
,	,	,	,	/
,	,	,	,	%
,	,	,	,	/

%							
							-
							-
							-
							-

%							
							-
							-
							-
							-

%							
							-
							-
							-
							-

(%)

)

.(

.()

K	P	N						
----- / -----			%	/				
,	,	,	,	,	,			

, / , () / ,
 () / , () / ,
 % ,
 .() % ,

/ :

() /

.()

/ , , :
 . % , % , / , / , /

	-----	-----	
,	,	,	
,	,	,	
,	,	,	
,	,	,	(,)
(/)			
,	,	,	
,	,	,	
,	,	,	
,	,	,	
,	,	,	,

%			
	----- / -----		
	,	,	
	,	,	
	,	,	
,	,	,	(,)
(/)			
	,	,	
	,	,	
	,	,	
	,	,	
,	,	,	,

%	%	/	
,	,	,	
,	,	,	
,	,	,	
,	,	,	(,)
(/)			
,	,	,	
,	,	,	
,	,	,	
,	,	,	
,	,	,	,

.

:

. / ,
(% , % ,)
(,)

. /

:

()
%

.(/ ,)

. ,

% , /

	-----	-----	
,	,	,	
,	,	,	
,	,	,	
,	,	,	(,)
(/)			
,	,	,	
,	,	,	
,	,	,	
,	,	,	
.	.	,	,

.(,) = .

%			
	-----	/	-----
	,	,	
	,	,	
	,	,	
,	,	,	(,)
(/)			
	,	,	
	,	,	
	,	,	
	,	,	
,	.	.	,

.(,) = .

%	%	/	
(/)			
,	,	,	
,	,	,	
,	,	,	
,	,	,	(,)
(/)			
,	,	,	
,	,	,	
,	,	,	
,	,	,	
,	,	,	,

:

() :

()

.()

(,) (,) (,)

.(/ ,) (/ ,)

(% ,)

,

.(% ,)

:

./

.() / ,
 .() / ,
 .()% ,
 .()% ,

/	-----	-----	
,	,	,	
,	,	,	
,	,	,	
,	,	,	(,)
(/)			
,	,	,	
,	,	,	
,	,	,	
,	,	,	
,	,	,	,

%			
	----- / -----		
,	,	,	
,	,	,	
,	,	,	
,	,	,	(,)
(/)			
,	,	,	
,	,	,	
,	,	,	
,	,	,	
,	,	,	,

%	%	/	
,	,	,	
,	,	,	
,	,	,	
,	,	,	(,)
(/)			
,	,	,	
,	,	,	
,	,	,	
,	,	,	
,	,	,	,

/ ° /

.()

.()

° /

()

.() ° /

. ° /

.

. ° /

° /

. /

° /

		%	/	°
'	'			/
'	'			
'	'			
'	'	'		
'	'			/
'	'			
'	'			
'	'	'		
'	'			/
'	'			
'	'			
'	'	'		

		%	/	°
	,			/
	,			
	,			
,	,			
	,			/
	,			
	,			
,	,			
	,			/
	,			
	,			
	,			

		%	/	°
	,			/
	.+			
	,			
,	,			
	,			/
	,			
	,			
,	,	,		
	,			/
	,			
	,			
,	,	,		

- Abulfatih, H. A. 1979. Vegetation of Higher elevations of Asir, Saudi Arabia. Proc. Saudi. Bio. 3: 139-148.
- Al-Barrak, S. 1986. Properties and classification of some oasis soil of Al-Hassa, Saudi Arabia. Arab Gulf J. Scient. Res. 4: 349-359.
- Al-Farhan, A. H. 1991. Two new *Convolvulus* taxa from the Arabian Peninsula, Bot. Linn. Soc., 106: 259-263.
- Al-Farhan, A. H. 1993. A new species of *convolvulus* (convolvulaceae) from Saudi Arabia, Brittonia, 45 (2): 169-171.
- Al-Farhan, A. H. 1994. Family convolvulaceae in Saudi Arabia, Bio. Sci. vol. 3: 141-232.
- Al-Farhan, A. H. 1994. Taxonomic revision of the Genus *Cuscuta* L. in Saudi Arabia, Arab Gulf Jour. Sci. Res. 12 (1) 99-107.
- Al-Turki, T. A. 1996. A preliminary checklist of the flora of Qassim, Saudi Arabia. (Accepted for publication in Feeds Repertorium).
- Al-Turki, T. A. and A. Ghafoor. 1996. The genus *Chenopodium* L. in Saudi Arabia. Feeds Repoertorium 107 (3-4): 189-208.
- Banthorpe, D. V. and R. J.S. Duprey, M. Hassan, J. F. Janes and B. M. Modawi. 1981. Chemistry of Sudanese flora. Par II. Essential of *Mentha longifolia*. Egypt J. Chem., 23, 63-65.
- Boulos L. 1985. Contribution to the Flora of the Asir mountains, Saudi Arabia, Arab Gulf J. Sci. Res. 3 (1): 67-94.
- Bremner, J. M. 1965. Nitrogen availability indexes. In. C. A. Blact et. al. (ed). Methods of soil analysis. Part 2 Agronomy. 9: 1324 – 1345.
- Chaudhary S. and M. Akram. 1986. The genus *Salsoal* (Chenopodiaceae) in Saudi Arabia, Proc. Saudi Bio. Soc. 9: 57-89.

- Chaudhary, S. 1989. Weeds of southwestern Arabian Peninsula. Trop. Pest. Manag. 26: 299-302.
- Chaudhary, S. A. 1985. Studies of *Heliotropium* L. in Saudi Arabia, Arab Gulf. J. Sci. Res. 3 (1): 33-53.
- Chaudhary, S. and Lavranos, J. J. 1985. Studies in the flora of Arabia. XVI. Two new species of *Ceropegia* from Saudi Arabia, Notes RBG Edinb. 42 (2) 315-319.
- Chaudhary, S. M. Akram. 1987. Weeds of Saudi Arabia and Arabian Peninsula, RAWRC, Ministry of Agri. and Water. 246p.
- Collenette, S. 1985. An Illustrated guide to the flowers of Saudi Arabia. MEPA, Saudi Arabia and Scorpion published, London. 514p.
- Cottenie, A. 1980. Expert consultation, F.A.O., Rome.
- Croteau, R. 1991. Metabolism of monoterpenes in mint (*Mentha*) species. *Planta Medica*, 57, Supplement Issue 1, S10-S14.
- Day, R. A. 1956. Quantitative Analysis (3ed.), Eaglewood Cliffs, N. J.: Prentice-Hall, Inc.
- De Marco, G. and A. Dinelli, 1974. First contribution to the floristic knowledge of Saudi Arabia. *Ann. Bot.* 33: 209-236.
- Fayed, A. and K. Zayed, 1989. Vegetation along Makkah – Taif Road (Saudi Arabia). *Arab Gulf J. Sci. Res.* 7 (3): 97-117.
- Field, D. V. 1981. A new species of *Rhytidocaulon* (Asclepiadaceae) from Saudi Arabia. *Kew Bull.*, 36-51.
- Forsskal, P. 1775. *Flora Aegyptiaco-Arabica*. ed. Niebuhr, C. Copenhagen. 220p.
- Hadidi, M. N. 1977. Tribulaceae as a distinct family, publications from Cairo Univ. *Herb.* 7-8: 103-108.

- Hedge, I. C. 1982. Studies in the flora of Arabia ii, some new and interesting species of Labiatae. Notes R.B.G Edinb. 40: 63-73.
- Hefendehl F. W. and M. J. Murray. 1976. Genetic aspects of the biosynthesis of natural odors. Lloydia 39, 39-52.
- Jackson, M. L. 1973. Soil chemical analysis. New Delhi, India; Prentice-Hall, India.
- Jenkins, M. 1976. The effect of nitrogen and phosphorus fertilizer on the yeild and quality of irrigated winter wheat and on some agro-chemical indices of the soil. Field Crop. Abstract. 39: 942.
- Karousou, R. T. Lanaras and S. Kokkini. 1998, Piperitone oxide essential oils from *Mentha longifloia* subsp. *Petoilata* and *M. X villosos-nervata* grown wild on the Island of Crete (S. Greece). J. Essent. Oil Res. 10, 375-379.
- Kjonaas R and R. Croteau. 1983. Determination that limonene as the first cyclic intermediate in the biosynthesis of oxygenated p-menthane monoterpenes in *Mentha piperita* and other *Mentha* species. Arch. Biochem. Biochem. Biophys. 220, 79-89.
- Lawrence, B. M.1981. Essential Oils 1979-1980. Allured Publishing Crop ., Illinois.
- Lawrence, B. M.1985. A review of the world production of essential oils 1984. Perf. Flav. 13, 2-16.
- Lincoln, D. E. and M.J. Murray. 1978. Monogenic basis for reduction of (+)-pulegone to (-)-menthone in *Mentha* oil biogenesis, Phytochemistry 17, 1727-1730.
- Lincoln, D.E. M. J. Murray and B. M. Lawrence. 1986. Chemical composition & genetic basis for the isopinocampone chemotype of *M. Citrata* hybrids. Phytochemisry 25, 1857-1863.

- Mandaville, J. P. 1990. Flora of Eastern Saudi Arabia, Kegan Paul International Jointly with NCWCD, Riyadh, 482p.
- Marotti, M. R. Piccaglia and E. Giovanelli. 1989. Differences in essential oil composition of *Ocimum basilicum* L. Italian cultivars related to morphological characteristics. *J. Agric. Food Chem.*, 44, 3926-3929.
- Migahid, A. M. and M. A. Hammouda. 1974. Flora of Saudi Arabia ed. 1, Riyadh Univ. Riyadh, 574p.
- Murray, M.J. D. E. Lincoln and F. W. Hefendehl. 1980, Chemogen evidence supporting multiple allele control of the biosynthesis of (-)-menthone and (+)-isomenthone stereoisomers in *Mentha* species, *Phytochemistry* 19, 2103-2110.
- Philby, H. St. J. B. 1993. The Empty Quarter. London. 433p.
- Rhoades, H. D. 1982. Methods of Analysis for soils, plants and waters. University of California.
- Schweinfurth, G. 1912. Arabische Pflanzennamen aus Aegypten, Algerien und Jemen. Berlin. Xxiv 232p.
- Shetlon, W. R. and H. J. Harper. 1941. A rapid method for the determination of total phosphorus in soil and plant material. *Lowa State College, J. of Sci.* 15: 403 – 413.
- Soliman, M.A. El-Sohly, M. M. Fathy and F.S. El-Sakhawy. 1998. A comparative study of the essential oils from certain *Mentha* and *Salvia* species grown in Egypt. *Egypt. J. Pharm. Sci.*, 38, 553-564.
- Thomas B. 1932. Arabia Felix. London. 397p.
- Trease, G. E. and W.C. Evans. 1983. Pharmacognosy, 12th Edition, Bailliere Tindall, London.

- Umeric, S.C. H. U. Anaso and L. J. C. 1998. Anyasoro. Insecticidal potentials of *Ocimum basilicum* leaf-extract. *Bioresources Technol.*, 64 (3), 237-239.
- Vesey-Fitzgerald, D. F. 1957a. The vegetation of the Red Sea coast north of Jeddah, Saudi Arabia. *J. Ecol.* 45: 547-562.
- Vesey-Fitzgerald, D. F. 1957b. The vegetation of central and eastern Arabia. *J. Ecol.*, 45: 779-798.
- Vicentt, B. A. L. 1984. Golden days in the desert. Wild flowers in Saudi Arabia, Immel publishing, London, 169p.
- Wan, J. A. Wilcock and M. J. Coventry. 1990. The effecto of essential oils of basil on the growth of *Aeromonas hydrophila* and *Pesedomnas fluorescens*. *J. Appl. Microbiol.* 84 (2), 152-158.
- Zohary, M. 1957. A contribution to the Flora of Saudi Arabia. *J. Linn. Soc. Bot.*, 55: 632-643.