

*Hypericum*

(3)

(2)

(1)

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(2) (1)

(3)

2005/06/28

2005/11/15

*(clusiaceae ) Hypericum*

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# Study of the morphological variability of reproductive organs of some species *Hypericum* genus in Syria

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## ABSTRACT

The results of studying the morphological characteristics of the flower, fruit, pollen grains, and seeds between some of *Hypericum* genus species, show that there are relevant morphological differences among the studied species, which can be considered as taxonomical criteria for distinguishing the studied species of *Hypericum* genus from each other.

**Key Words:** *Hypericum*, Flowers, Pollen grains, Seeds, Taxonomy, Variability, Syria

Intraspecific variability

Interspecific variability

*Hypericum**H.perforatum**Hypericum perforatum*

Barnes, Nahrstedt.1997, Patoka, 2003)

.(Chrubasik 2000, 2001

Mouterde 1970 (Judd, 1999) 360

15

21

22

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(1)

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.2004-2003

(1)

			<i>H. perforatum</i>
			<i>H. langinosum</i>
			<i>H. amblysepalum</i>
			<i>H. libanoticum</i>
			<i>H. nanum</i>
		) ( ) ( ) ( ) ( )	<i>H. triquetrifolium</i>
			<i>H. thymifolium</i>
		( )	<i>H. oliveri</i>
			<i>H. montbretii</i>

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) Theales

Clusiaceae

*Hypericum*

(*Hypericaceae*)

:

. *H. perforatum* *H. amblysepalum*



*H .perforatum*

(1)

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(

Mouterde 1970, )  
 2005. Zohary 1972, Davis.1978, Post, 1932, William. 1967  
 .(1997

:

20 .(×1000 ×400)

15 :

(4-3)

.(1987 )

ANOVA :

: (2 ) . :



(2×) *Hypericum perforatum* (2)

: (3 ) : :

. (h a-3) *H. perforatum*, *H. montbretii*

. ( d -3) *H. libanoticum*

*H. triquetrifolium*, *H. thymifolium*, *H. oliveri*,

. ( c -3) *H. nan um*,

( e -3) *H. amblysepalum*

. ( b -3) *H. langinosum*

:

*H. perforatum* *H. triquetrifolium*, *H.*

-

( c a -3 ) . *nanum*

*H. montbretii*, *H. libanoticum*, *H. thymifolium*,  
 (h d e b -3) *H. amblysepalum*, *H. langinosum*

:

*H. perforatum*, *H. libanoticum*, *H. nanum*, *H. montbretii*  
 (h d a-3)

*H. langinosum*, *H. amblysepalum*, *H. triquetrifolium*, *H.*  
 (e c b -3) *thymifolium*, *H. oliveri*

:

*H. nanum*

:

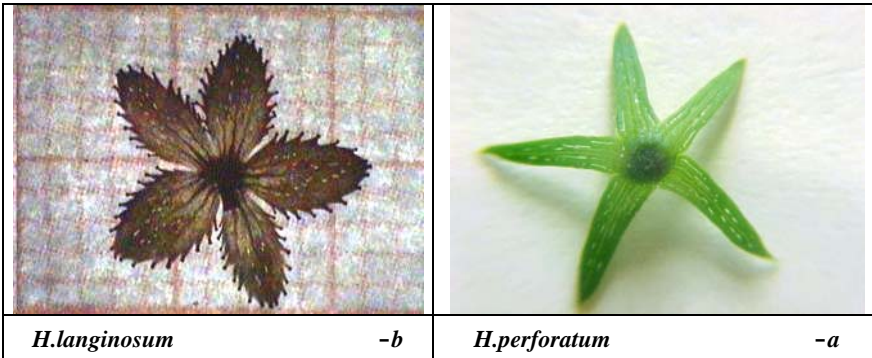
(a -3) *H. perforatum* ( 2-1)





*H. libanoticum*

(e d b -3) , *H. thymifolium*, *H. amblysepalum*, *H. langinosum*, *H. oliveri*  
*H. triquetrifolium*

(c -2)

(h -3) *H. montbretii*



	
<i>H. libanoticum</i> -d	<i>H. triquetrifolium</i> -c
	
<i>H. montbretii</i> -h	<i>H. amblysepalum</i> -e

(2×)

(3)

:(4 )

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:

.(a-4) *H. perforatum*

*H. nanum*, *H. montbretii* *H. langinosum*,

(h f e b-4) *H. triquetrifolium*, *H. thymifolium*

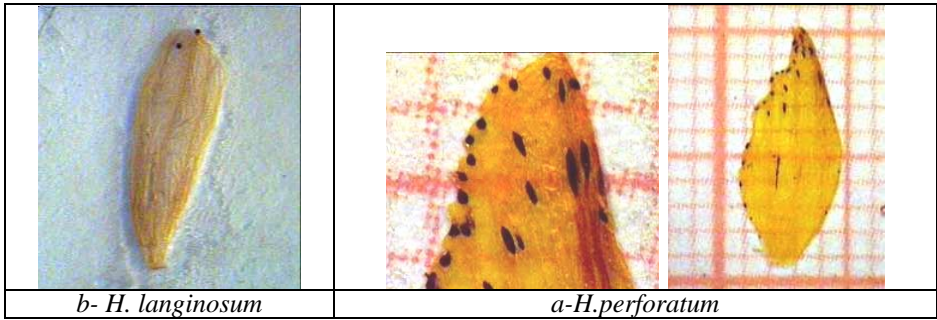
*H. libanoticum*, *H. amblysepalum*,




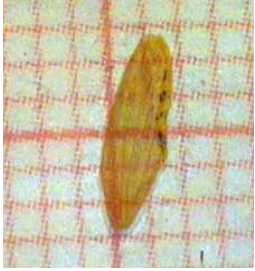


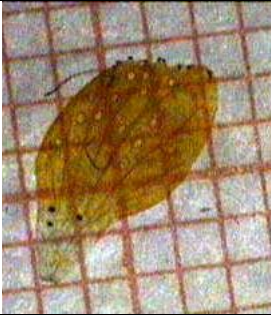
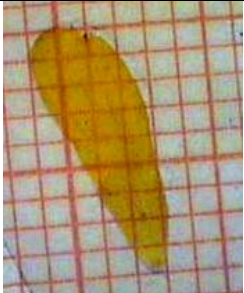
(k d c-4) *H. oliveri*

:



( d K a -4) *H.perforatum* *H.oliveri*,*H.libanoticum* -  
 (c -4) *H.amblysepalum* -  
 .(f b -4) *H.triquetrfolium*, *H.langinosum* -  
 .( e -4) *H.nanum* -  
 .( h -4) *H.thymifolium* -  
 :  
 .(a -4) *H.perforatum* -  
*H.libanoticum*, *H.amblysepalum*, *H.oliveri* -  
 .( k h f d c b -4) *H.langinosum*. *H.triquetrfolium*, *H.thymifolium*,  
 .( e -4) *H.nanum* -  
 :  
 .( a -4) *H.perforatum* ,*H.montbretii* -  
 .( b -4) *H. langinosum* ( 2-1) -  
 ( 6 -2) -  
 ( e -4) *H.nanum* -  
 ( 3 -1) -  
 .( h -4) *H.thymifolium* -  
*H.amblysepalum* -  
 .( k d c -4) ,*H.libanoticum*,*H.oliveri* -  
*H. nanum* -  
 .(f -4) *H.triquetrfolium* -



	 
<i>d-H.libanoticum</i>	<i>c-H.amblysepalum</i>
	 
<i>f-H.triquetrfolium</i>	<i>e-H.nanum</i>
	
<i>k-H.oliveri</i>	<i>h-H.thymifolium</i>

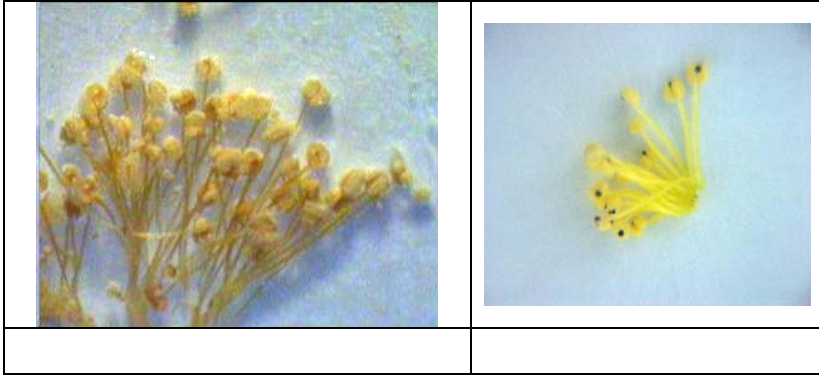
(3× 2×)

(4)

:

*H. perforatum*, *H.*

*langinosum*, *H. triquetrfolium*, *H. montbretii*



(2x)

(5)

(3)

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(3x)

(6)

(7)

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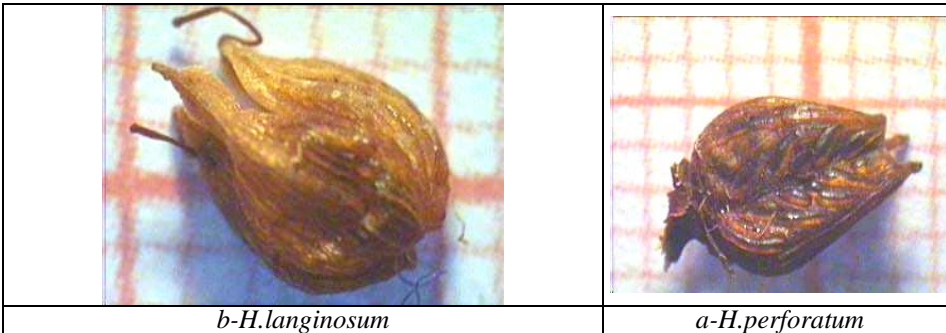
*H. perforatum*, *H. nanum*, *H. triquetriflium*, *H. libanoticum*, *H.*  
*(d b a -7) thymifolium H. langinosum*,  
*(c -7) H. amblysepalum* -  
*(e -7) H. oliveri* -  
*(f -7) H. montbretii* - -

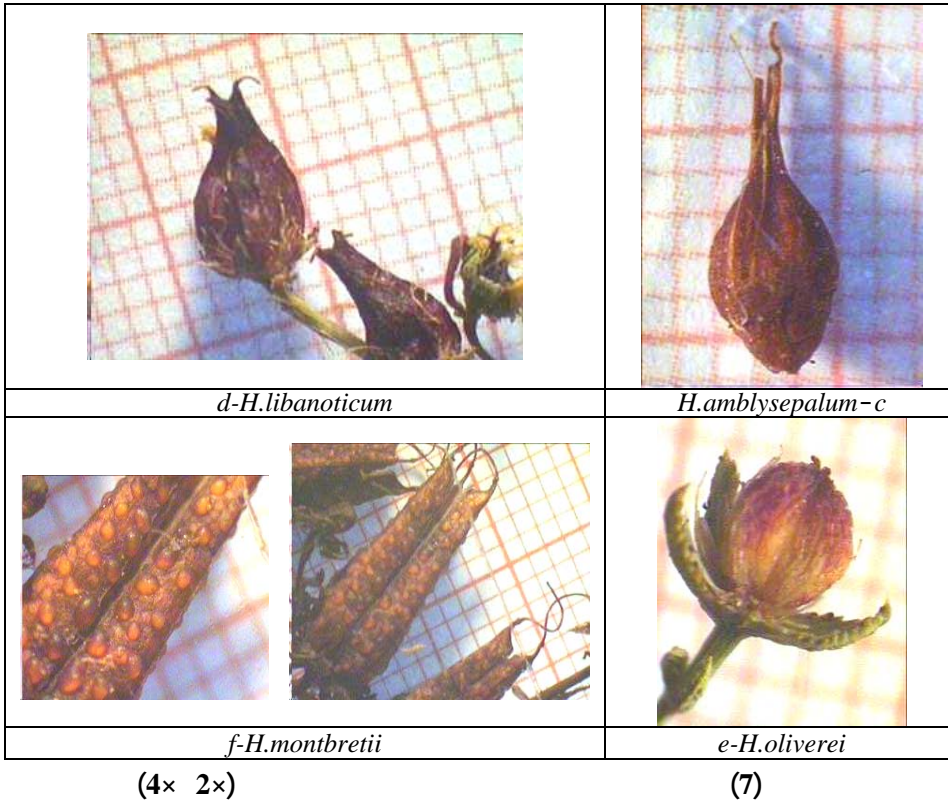
:

*(a-7) H. perforatum* -  
*(f -7) H. montbretii* -  
*(e d b c -7)* -

:

*H. montbretii*  
*H. libanoticum*





(2)

(2)

<i>l</i>			<i>l</i>			<i>l</i>				
<i>l</i>			<i>l</i>			<i>l</i>				
1.84	0.42	0.77	1.77	0.52	0.91	2.74	0.18	0.5		<i>H.perforatum</i>
1.96	0.42	0.82	2.07	0.48	0.98	3.81	0.13	0.47		
1.53	0.36	0.54	3.03	0.26	0.77	1.34	0.32	0.36		<i>H.langinosum</i>

1.75	0.4	0.7	1.27	0.61	0.85	2.38	0.19	0.44		
1.75	0.4	0.7	1.27	0.69	0.88	2.38	0.22	0.46		<i>H.amblysepalum</i>
2	0.37	0.72	1.66	0.37	0.58	2.24	0.14	0.29		<i>H.libanoticum</i>
1.5	0.42	0.62	2.58	0.45	1.15	2.61	0.13	0.31		<i>H.nanum</i>
1.7	0.26	0.42	1.74	0.25	0.51	1.37	-0.1 0.16	0.18		<i>H.triquetrefolium</i>
1.72	0.36	0.6	2.46	0.38	0.93	1.83	0.13	0.23		<i>H.thymifolium</i>
0.91	0.47	0.4	1.78	0.37	0.65	2.43	0.19	0.44		<i>H.oliveri</i>
2.9	0.43	1.23				3.74	0.26	0.93		<i>H.montbretii</i>

SPSS

ANOVA

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(3)

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(3)

	1	2	3	4	5	6	7	8	9
<b>1:H.perforatum</b>	-								
<b>2: H.perforatum</b>	*	-							
<b>3 :H.langinosum</b>	*	*	-						
<b>4: H.amblysepalum:</b>	NS	*	*	-					
<b>5:H.libanoticum</b>	NS	*	*	NS	-				
<b>6:H.nanum:</b>	NS	*	*	NS	NS	-			
<b>7:H.triquetrefolium</b>	*	*	NS	*	*	*	-		
<b>8:H.thymifolium</b>	*	*	NS	NS	NS	*	NS	-	
<b>9:H.oliveri</b>	NS	*	*	NS	NS	NS	*	*	-
<b>10:H.montbretii</b>	*	NS	*	*	*	*	*	*	*

(Tukey

%95

\*

NS)

/

(4)

	1	2	3	4	5	6	7	8
<b>1:H.perforatum</b>	-							
<b>2:H.perforatum</b>	NS	-						
<b>3 :H.langinosum</b>	*	*	-					
<b>4:H.amblysepalum:</b>	*	*	*	-				

5: <i>H.libanoticum</i>	NS	*	*	*	-			
6: <i>H.nanum</i> :	*	*	*	*	*	-		
7: <i>H.triquetrefolium</i>	NS	NS	*	*	NS	*	-	
8: <i>H.thymifolium</i>	*	*	*	*	*	NS	*	-
9: <i>H.oliveri</i>	NS	NS	*	*	NS	*	NS	*

(Tukey %95 \* NS)

:

2.....		1
4.....		1
3.....		2
		2
<i>H.perforatum</i> ...		3
6-2		3
<i>H.nanum</i> .....		3
<i>H.triquetrefolium</i>		4
5.....		4
7.....		4

«            »            ...		
<i>H.amblysepalum</i>		5
		5
6.....		
<i>H.libanoticum.</i>		6
<i>Holiverei.</i> .....		6
<i>H.montbretii.</i> ...		7
8.....		7
	2-1	8
<i>H.langinosum.</i> ...		
	3-1	8
<i>H.thymifolium.</i>		

(            )

- 1
- 2
- 3

*H.perforatum*

(5)

(5)



	/	/	
( )	1.45	21.8	<i>H.perforatum</i>
	0.52	17.6	
( )	1.23	16.23	<i>H.langinosom</i>
( )	1.89	24.23	<i>H.amblysepalum</i>
( )	1.2	24.23	
( )	1.17	17	<i>H.libanoticum</i>
( )	3.1	26.2	<i>H.nanum</i>
( )	0.6	16.23	<i>H.triquetrefolium</i>
	1.7	23	<i>H.thymifolium</i>
	1.29	31	<i>H.oliveri</i>
	2.28	20.23	<i>H.montbretii</i>

SPSS

ANOVA

.(6)

(6)

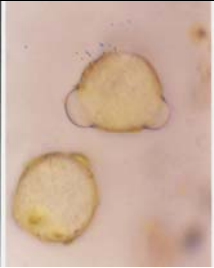

	1	2	3	4	5	6	7	8	9
1: <i>H.perforatum</i>	-								9
2: <i>H.perforatum</i>	*	-							
3 : <i>H.langinosum</i>	*	NS	-						
4: <i>H.amblysepalum</i>	*	*	*	-					
5: <i>H.libanoticum</i>	*	NS	NS	*	-				
6: <i>H.nanum</i> :	*	*	*	*	*	-			
7: <i>H.triquetrefolium</i>	*	NS	NS	*	NS	*	-		
8: <i>H.thymifolium</i>	NS	*	*	NS	*	*	*	-	
9: <i>H.oliveri</i>	*	*	*	*	*	*	*	*	-
10: <i>H.montbretii</i>	NS	*	*	*	*	*	*	*	*



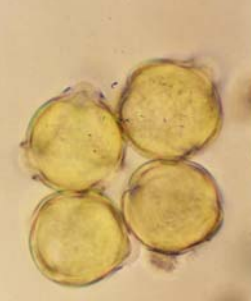

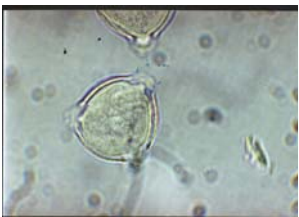
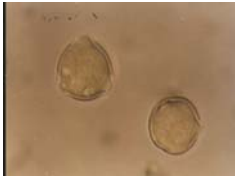



(Tukey

%95

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NS)

	
<i>H.perforatum</i> (1000×)	<i>H.perforatum</i> (1000×)

		
(1000×) <i>H.amblysepalum</i>	<i>H.amblysepalum</i> (1000×)	(1000×) <i>H .langinosum</i>
		
<i>H.thymifolium</i> (400×)	<i>H.nanum</i> (1000×)	<i>H.libanoticum</i> (1000×)
		
<i>H.montbretii</i> (1000×)	<i>H.oliveri</i> (1000×)	<i>H.triquetrifolium</i> (1000×)

(8)

	:		
	:		
	:		-1
<i>H.perforatum, H.langinosum</i>			-
<i>H.amblysepalum, H.triquetrefolium, H.montbretii, H.thymifolium.</i>			
<i>.H.oliveri, H.libanoticum.</i>			-
<i>H.nanum</i>			-
	:		-2
<i>H.perforatum, H.langinosum, H.montbretii,</i>			-
<i>H.thymifolium., H.nanum</i>			
<i>H.amblysepalum, H.triquetrefolium, H.libanoticum</i>		6-1	-
<i>. H.oliveri ( )</i>			-
<i>H. oliveri</i>			-3
	.		
<i>( 0.33×0.73) H.langinosum</i>			-4
<i>H.oliveri</i>		( 1.25×2.99)	
	:		-5
<i>H. thymifolium H.amblysepalum,</i>			-
<i>H.libanoticum</i>			
<i>H.oliveri ,H.nanum</i>			-
	.		
<i>. H.perforatum</i>			-
<i>H.montbretii</i>			-
	.		
<i>H.perforatum,</i>			-
<i>) H.triquetrefolium, H.langinosum, H.montbretii, H.thymifolium</i>			
<i>.(</i>			

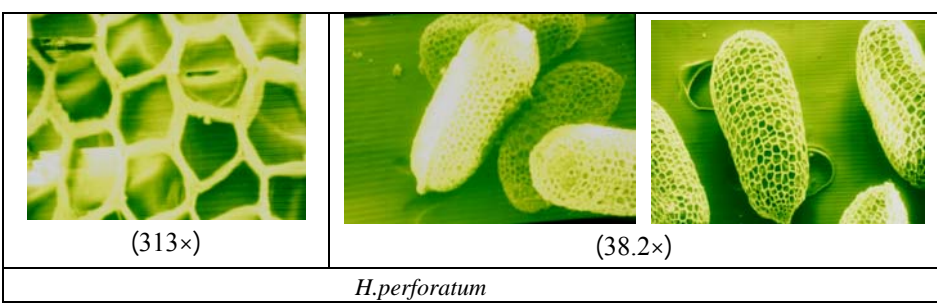
*H.perforatum*, *H.langinosum*, -  
*H.oliveri* *H.triquettrifolium* *H.montbretii*

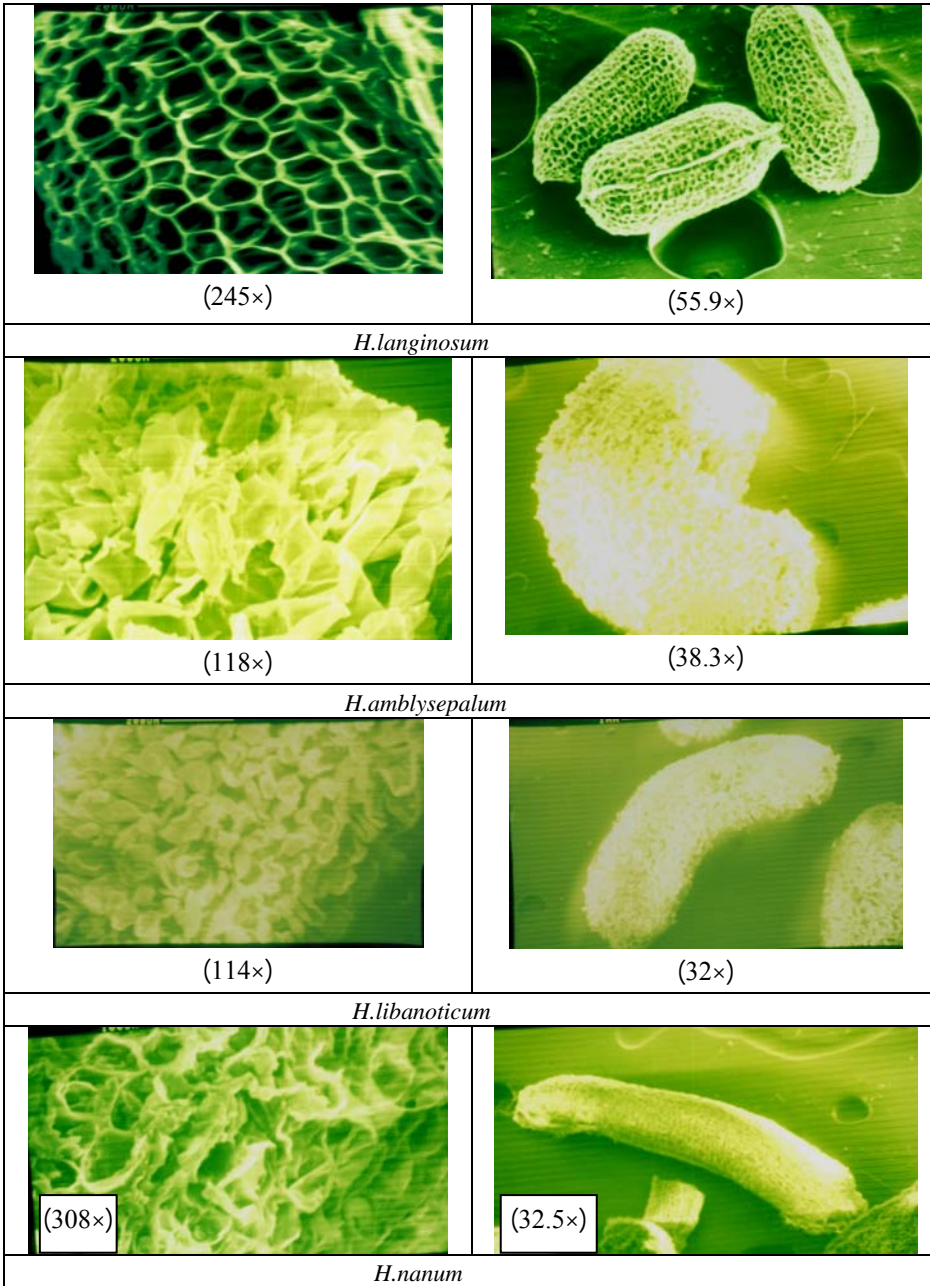
*H.triquettrifolium* -  
*H.triquettrifolium* -

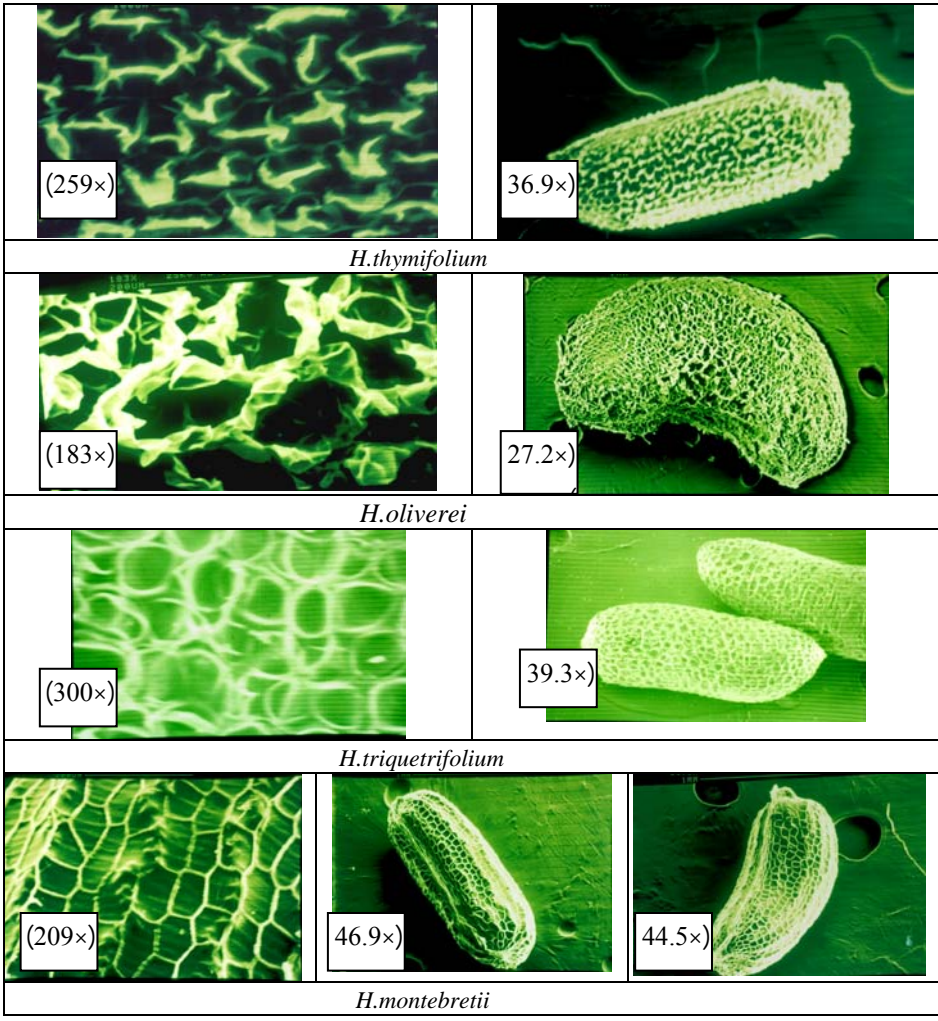
*H.langinosum*, *H.montbretii*, *H.thymifolium* -  
 ( ) *H.perforatum* *H.triquettrifolium*,  
*H.montbretii*

(7)

/	/	/	/	/	/	
2.62	2.21	0.93	0.45	0.53	1.17	<i>H.perforatum</i>
2.74	2.23	0.57	0.27	0.33	0.73	<i>H.langinosum</i>
4.09	2.33	1.94	0.62	1.06	2.46	<i>H.amblysepalum</i>
4.42	3.49	2.47	0.69	0.87	3.03	<i>H.libanoticum</i>
7.91	5.66	2.12	0.3	0.42	2.39	<i>H.nanum</i>
3.75	2.86	1.66	0.56	0.72	2.05	<i>H.triquettrifolium</i>
2.9	2.48	1.05	0.46	0.54	1.35	<i>H.thymifolium</i>
2.7	2.08	1.98	1.1	1.43	2.96	<i>H.oliveri</i>
3.03	2.64	1.18	0.55	0.59	1.53	<i>H.montbretii</i>







(9)

SPSS

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.(8)

ANOVA

/ (8)

	1	2	3	4	5	6	7	8
1: <i>H.perforatum</i>	-							
2: <i>H.langinosum</i>	NS	-						
3: <i>H.amblysepalum</i> ضيق الورقة	NS	NS	-					
4: <i>H.libanoticum</i>	*	*	*	-				
5: <i>H.nanum</i>	*	*	*	*	-			
6: <i>H.triquetrifolium</i>	*	*	*	NS	*	-		
7: <i>H.thymifolium</i>	NS	NS	NS	*	*	*	-	
8: <i>H.oliveri</i>	NS	NS	NS	*	*	*	*	-
9: <i>H.montbretii</i>	*	*	NS	*	*	*	NS	*

(Tukey

%95

\*

NS)

## REFERENCES

- Barenes, J; Linda,A; Anderson,J; Philipson, D.,(2001). St Jones wort (*Hypericum perforatum* L.): A review of its chemistry, pharmacology and clinical properties ,journal of pharmacy and pharmacology ,Brunswick square ,London P583-600
- Chrubasik, R; Basil,D .Roufogalis.,(2000). Herbal medicinal products for the treatment of pain ,LismoreNSW2480,Australia, P144-151
- Davis, Ph., (1978). Flora of Turkey ,Edinburgh, P354-401 Bayrouth.P519-529
- Judd. Campbell. kellogy. Stevens (1999). Plant systematic, Sinauer Associates, INC, Sunderland, Massachusetts. U.S.A.
- Mouterde, P., (1970). Nouvle Flore du Liban et de la Syrie ,Tome II Dar el-Machreq- Bayrouth.P519-529
- Nahrstedt,A; Butterweck,V. (1997). Biologically active and other chemical constituents of the herb of *Hypericum perforatum* L., George them verlag stuttgart, New York P129-134
- Patocka, J., (2003). The chemistry, pharmacology and toxicolog of the biological active constituents of the herb *Hypericum perforatum* L, Journal of Applied Biomedicine N (1) Ceske Budejovi ,Czech Republic P61-70
- Post,G,E., (1932). Flora of Syria, Palaestina and Sinai, Volume I, American press, Beirut,227-234
- William,T; Stearn.,(1967),Botanical Latin,Nelson.P325-342
- Zohary, M.,(1972), Flora of Palaestina, Volume I, The Israel Academy of Sciences and Humanities.P221-224
- .(1997) .
- .29-25
- .(1987) .
- .122-119 , -
- .(1987) .
- 101
- .(2005) .