Supplement

The following supplementary materials are available for this article: Astashenkov, A.Y., E.A. Karpova, V.A. Cheryomushkina. 2021. Diversity patterns of life forms and phenolic profiles of endemic *Nepeta* plants along an aridity gradient of a high-mountain zone in Central Asia. Taiwania 66(4): 541-556. Doi: *10.6165/tai.2021.66.541*

Table 1s. Phenolic compound concentrations in the leaves of ***Nepeta*** species.

№	T r*	λ max	Compound	Concentration, mg g^{-1} of dry weight				
				N. kokamirica	*N. mariae*	*N. pulchella*	*N. transiliensis*	*N. densiflora*
1	1.5	250	Ascorbic acid	0.6 ± 0.0a	0.9 ± 0.1b	0.5 ± 0.0a	1.7 ± 0.1c	0.6 ± 0.0a
2	1.8	290	Hydroxycinnamic acid	2.1 ± 0.3b	1.7 ± 0.3b	1.1 ± 0.1a	0.9 ± 0.1a	4.8 ± 0.5c
3	2.2	325	Hydroxycinnamic acid	1.9 ± 0.1c	1.6 ± 0.3b	1.3 ± 0.1b	0.2 ± 0.0a	4.8 ± 0.4d
4	2.7	218, 245 sh., 297 sh., 327	Hydroxycinnamic acid	0.7 ± 0.1a	2.3 ± 0.4b	Nd	0.8 ± 0.0a	Nd
5	3.2	245, 327	Chlorogenic acid	7.1 ± 0.9d	3.8 ± 0.5b	5.2 ± 0.4c	0.7 ± 0.0a	7.9 ± 0.9d
6	3.6	245, 327	Hydroxycinnamic acid	0.5 ± 0.0a	0.6 ± 0.0a	0.6 ± 0.0a	0.5 ± 0.0a	0.8 ± 0.0b
7	4.7	236, 328	Caffeic acid	0.3 ± 0.0b	0.1 ± 0.0a	0.1 ± 0.0a	0.6 ± 0.0c	0.7 ± 0.0c
8	7.2	218, 245, 300sh., 328	Hydroxycinnamic acid	2.2 ± 0.3c	0.6 ± 0.0b	0.1 ± 0.0a	0.5 ± 0.0b	0.6 ± 0.0b
9	7.7	253, 267, 288 sh., 350	Flavone glycoside	1.2 ± 0.2b	1.8 ± 0.2c	0.3 ± 0.0a	0.9 ± 0.1b	Nd
10	7.9	254, 290 sh., 350	Orientin	0.3 ± 0.0a	3.0 ± 0.4b	0.2 ± 0.0a	0.3 ± 0.0a	Nd
11	9.6	239 sh., 323	Ferulic acid	2.8 ± 0.3e	0.6 ± 0.0c	0.1 ± 0.0a	0.4 ± 0.0b	1.6 ± 0.1d
12	10.9	325	Sinapic acid	0.5 ± 0.0b	0.4 ± 0.0b	0.2 ± 0.0a	0.8 ± 0.1c	0.3 ± 0.0a
13	12.0	266, 336	Vitexin	0.4 ± 0.0a	0.6 ± 0.0b	0.5 ± 0.0b	0.6 ± 0.0b	0.6 ± 0.0b
14	16.5	254, 267 sh., 348	Cynaroside	3.7 ± 0.3c	4.2 ± 0.5c	0.3 ± 0.0a	7.7 ± 0.8d	1.3 ± 0.1b
15	17.6	225, 283, 330 sh.	Naringin	0.8 ± 0.1a	4.5 ± 0.5b	12.3 ± 1.3d	Nd	5.9 ± 0.6c
16	18.4	255, 355	Hyperoside	Nd	1.0 ± 0.2a	1.1 ± 0.1a	1.0 ± 0.0a	0.8 ± 0.1a
17	19.4	255, 355	Isoquercitrin	0.4 ± 0.0a	0.6 ± 0.0a	Nd	0.6 ± 0.1a	12.0 ± 1.5b
18	20.6	255, 355	Rutin	Nd	Nd	Nd	Nd	2.2 ± 0.3a
19	24.1	325	Hydroxycinnamic acid	0.6 ± 0.0b	Nd	Nd	0.2 ± 0.0a	2.3 ± 0.2c
20	28.6	255, 355	Avicularin	1.4 ± 0.1b	0.3 ± 0.0a	Nd	2.0 ± 0.1c	Nd
21	30.2	325	Hydroxycinnamic acid	1.1 ± 0.2b	2.4 ± 0.4c	1.6 ± 0.1c	0.8 ± 0.0a	1.8 ± 0.2c
22	34.6	253, 267 sh., 347	Flavone glycoside	1.3 ± 0.1b	0.4 ± 0.0a	Nd	2.1 ± 0.4c	1.7 ± 0.2c
23	35.7	276	Cinnamic acid	0.5 ± 0.0a	0.4 ± 0.0a	4.2 ± 0.3b	0.3 ± 0.0a	Nd
24	37.0	253, 267 sh., 348	Flavone glycoside	1.5 ± 0.1b	2.6 ± 0.3c	0.3 ± 0.0a	1.6 ± 0.2b	2.3 ± 0.2c
25	37.5	360	Hydroxycinnamic acid	0.3 ± 0.0a	0.3 ± 0.0a	0.4 ± 0.0a	0.7 ± 0.0b	Nd
26	38.8	255, 267 sh., 350	Flavone glycoside	0.4 ± 0.0a	0.6 ± 0.0b	1.0 ± 0.1c	Nd	2.0 ± 0.3d
27	41.2	289, 326 sh.	Naringenin	0.4 ± 0.0b	0.3 ± 0.0a	1.3 ± 0.1c	0.2 ± 0.0a	0.4 ± 0.0b
28	42.1	325	Hydroxycinnamic acid	0.5 ± 0.0 a	0.5 ± 0.0a	0.8 ± 0.0b	0.5 ± 0.0a	Nd
29	44.9	253, 350	Luteolin	0.6 ± 0.0b	0.4 ± 0.0a	0.5 ± 0.0a	0.4 ± 0.0a	1.3 ± 0.2c
30	54.9	263, 310, 358	Galangin	0.2 ± 0.0a	0.5 ± 0.0b	0.5 ± 0.0b	1.3 ± 0.1c	Nd
The sum of the constituents				34.3 ± 3.2b	37.0 ± 4.2b	34.5 ± 2,9b	28.3 ± 2.4a	56.7 ± 6.1c

* Separation in gradient 2.

**Means in columns followed by the same letter do not differ significantly according to the Duncan's test ($p < 0.05$)

Table 2s. Phenolic aglycone compounds concentrations in the leaves of ***Nepeta*** species.

№	T r*	λ max	Compound	Concentration, mg g^{-1} of dry weight				
				*N. kokamirica**	*N. mariae*	*N. pulchella*	*N. transiliensis*	*N. densiflora*
5	1.7	245, 325	Chlorogenic acid	2.2 ± 0.3d	0.7 ± 0.0b	0.5 ± 0.0a	0.4 ± 0.0a	1.8 ± 0.2c
7	2.1	240, 325	Caffeic acid	0.3 ± 0.0b	0.1 ± 0.0a	0.1 ± 0.0a	0.07 ± 0.00c	0.2 ± 0.0b
13	2.5	267, 290 sh., 336	Vitexin	4.3 ± 0.4c	4.8 ± 0.5d	3.6 ± 0.4b	2.8 ± 0.2a	8.4 ± 0.6e
31	2.7	250, 267, 338	Flavone	2.9 ± 0.2a	7.9 ± 0.9c	2.8 ± 0.2a	3.9 ± 0.4b	12.6 ± 1.5d
32	3.1	250 sh., 320	Rosmarinic acid	2.4 ± 0.2c	0.7 ± 0.0ab	0.6 ± 0.0a	0.8 ± 0.0b	2.5 ± 0.2c
33	3.7	290	Hydroxycinnamic acid	1.1 ± 0.1b	0.4 ± 0.0a	0.5 ± 0.0a	1.3 ± 0.1c	1.1 ± 0.2b
34	3.9	250, 267, 290 sh., 340	Flavone	1.0 ± 0.1a	2.1 ± 0.4c	1.9 ± 0.1c	1.1 ± 0.2a	1.5 ± 0.1b
35	4.9	325	Hydroxycinnamic acid	0.5 ± 0.0c	0.1 ± 0.0a	0.1 ± 0.0a	0.3 ± 0.0b	0.2 ± 0.0ab
36	5.6	301	Salicilic acid	0.1 ± 0.0a	0.1 ± 0.0a	0.1 ± 0.0a	0.2 ± 0.0b	1.0 ± 0.1c
37	6.5	255, 295 sh., 372	Quercetin	0.2 ± 0.0c	0.02 ± 0.0a	0.05 ± 0.0b	0.05 ± 0.0b	1.6 ± 0.1d
27	7.4	289, 326 sh.	Naringenin	0.1 ± 0.0a	0.6 ± 0.0c	0.9 ± 0.1d	0.3 ± 0.0b	1.3 ± 0.1e
29	8.4	253, 267 sh., 291 sh., 350	Luteolin	0.4 ± 0.0a	0.6 ± 0.0b	0.4 ± 0.0a	1.0 ± 0.1c	0.4 ± 0.0a
38	11.4	325	Hydroxycinnamic acid	0.1 ± 0.0a	0.1 ± 0.0a	0.1 ± 0.0a	0.1 ± 0.0a	0.2 ± 0.0b
39	12.9	266, 290 sh., 337	Apigenin	0.1 ± 0.0a	0.2 ± 0.0b	0.3 ± 0.0c	0.2 ± 0.0b	0.6 ± 0.0d
The sum of the constituents				15.8 ± 1.2b	18.3 ± 1.5c	11.9 ± 0.6a	12.6 ± 1.0a	33.5 ± 3.2d
Percentage of total phenolic compounds				87.5 ± 8.3a	96.3 ± 9.9b	94.8 ± 9.2ab	93.7 ± 7.7ab	93.4 ± 8.5ab

* Separation in gradient 1.

Fig. 1s. Location of the sites of sampling of the species under study.

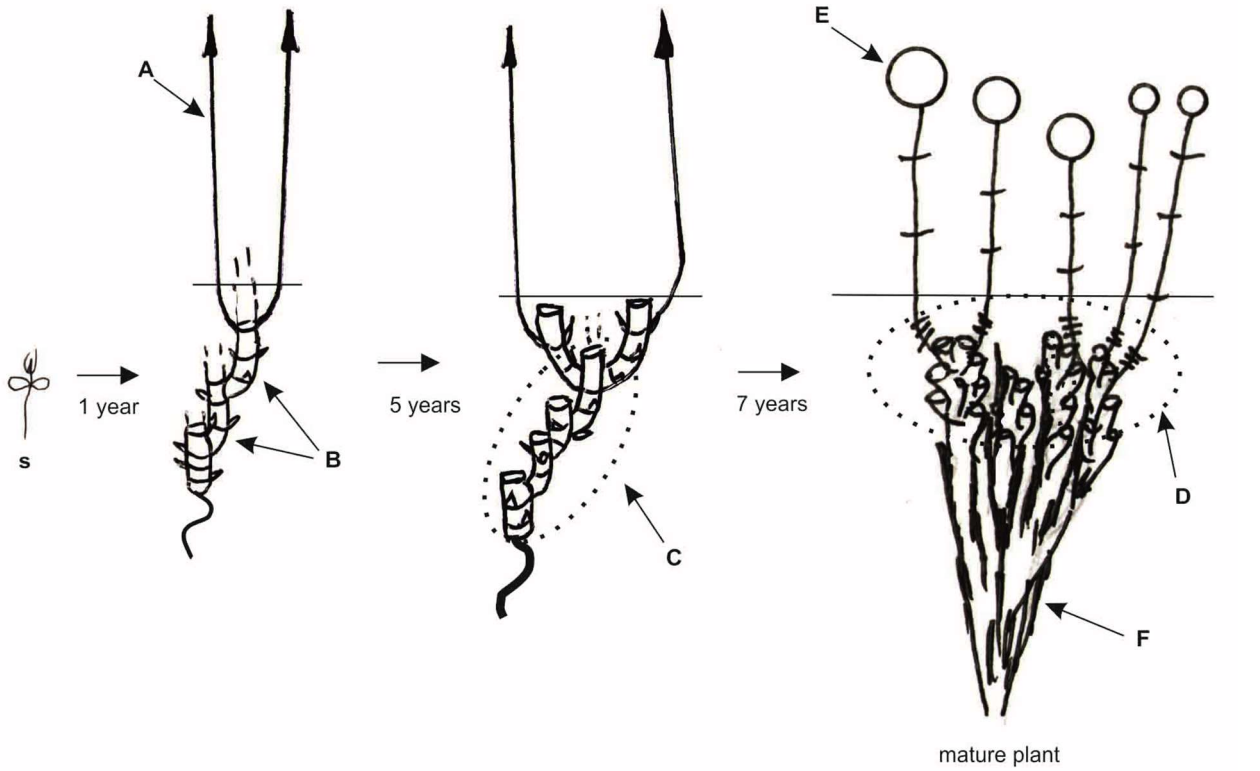

Fig. 2s. Construction of the ***N. mariae*** life form. **A**. orthotropic shoot, **B**. short modules creating of pseudomonopodial axis, **C**. compact caudex of young plant, **D**. compact caudex of mature generative plant, consisting of short modules, **E**. main inflorescence, **F**. tap root, S. seedling. The horizontal line: soil level; the arrows and numbers below indicate the developmental sequence and age of the individuals (here and in Figures 4—7).

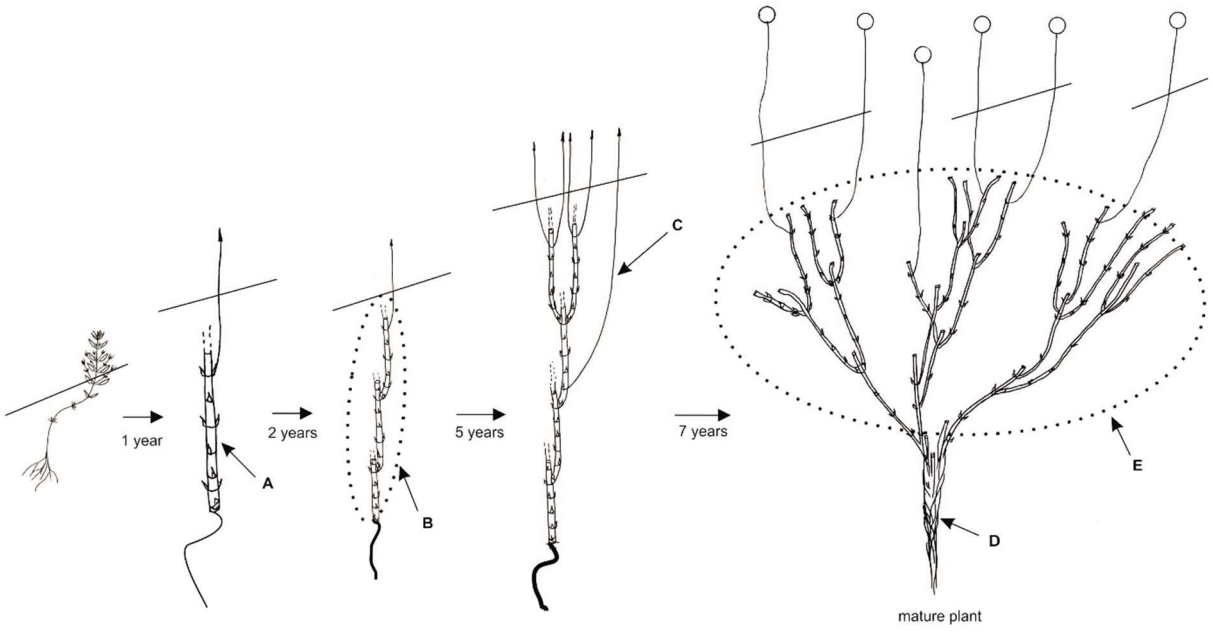

Fig. 3s. Construction of the ***N. kokamirica*** life form. **A**. long module, **B**. long modules creating of pseudomonopodial axis, C. long geophilic part of shoot, D. spacious caudex consisting of long modules, E. tap root.

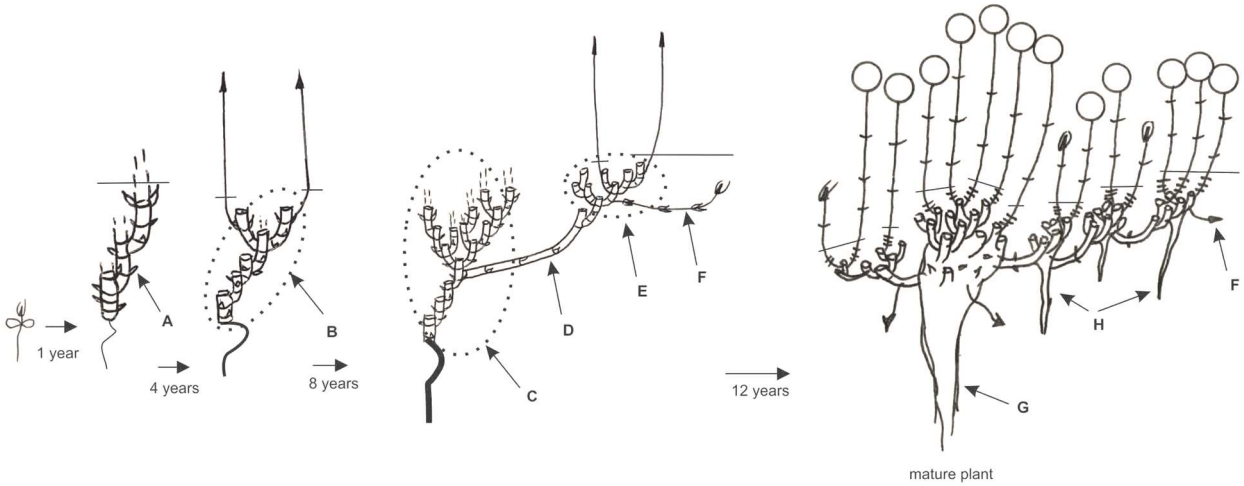

Fig. 4s. Construction of the ***N. pulchella*** life form. **A**. dormant bud, **B**. branching axis consisting of short modules, **C**. parent individual, **D**. long module derived from dormant bud, **E**. ramet, **F**. growing shoot with a long geophilic part, **G**. tap root, **H**. adventitious root.

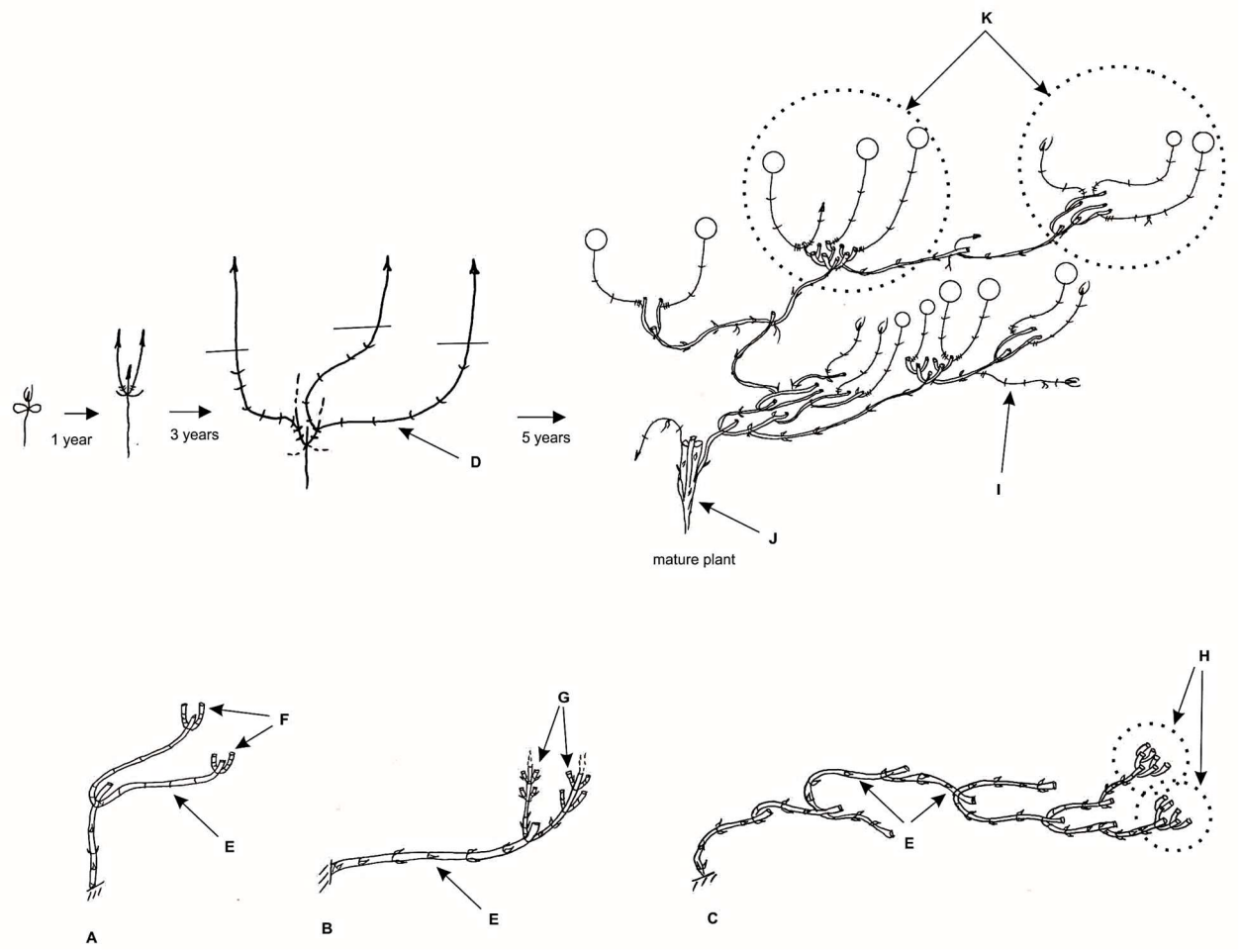

Fig. 5s. Construction of the ***N. densiflora*** life form. **A**. dormant bud, **B**. branching axis consisting of short modules, **C**. parent individual, **D**. long module derived from dormant bud, **E**. ramet, **F**. growing shoot with a long geophilic part, **G**. tap root, **H**. adventitious root.

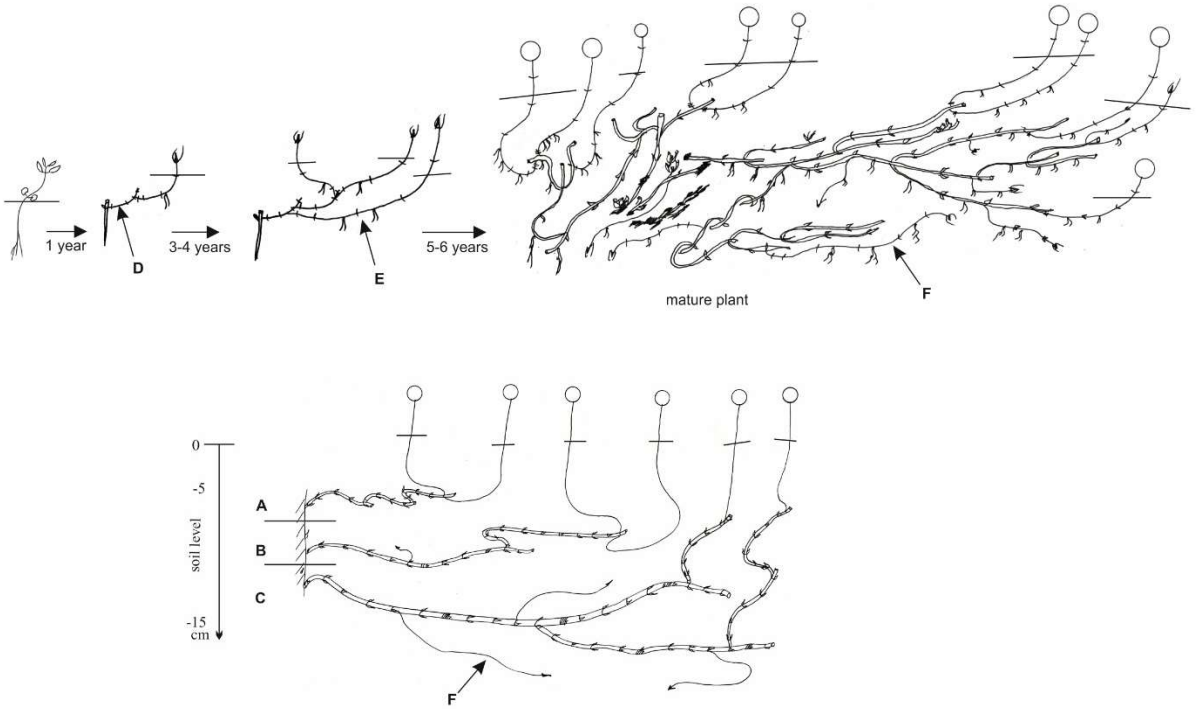

Fig. 6s. Construction of the ***N. transiliensis*** life form. A. long modules formed from monocyclic shoots, B. long modules formed from dicyclic shoots, C. long modules formed from polycyclic shoots, D. long module derived from renewal bud, E. long geophilic part of shoot, F. growing shoot.

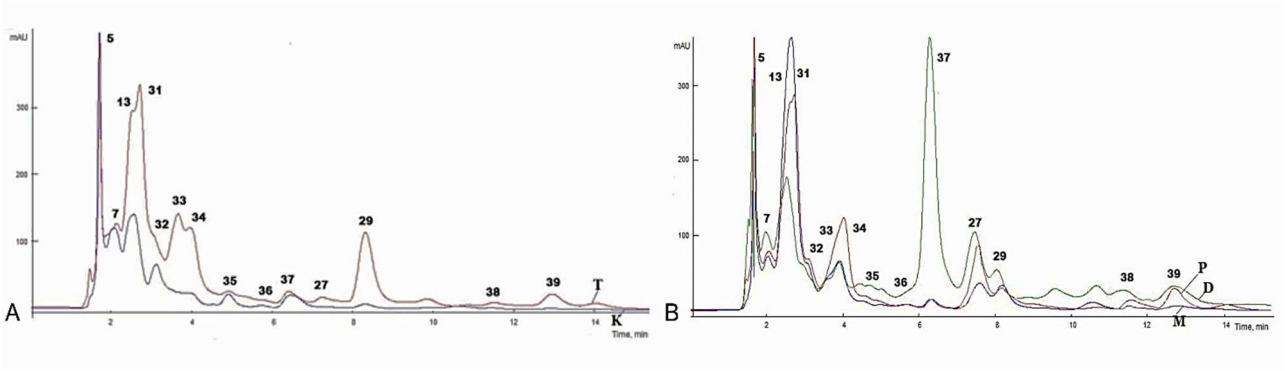

Fig. 7s (A, B). Segments of a characteristic chromatograms of aqueous ethanol extracts of the leaves of ***Nepeta*** species. Constituent numbers and letters for the species designation are in accordance with Tables 1s and 3. Separation in gradient 2, detection at 325 nm.

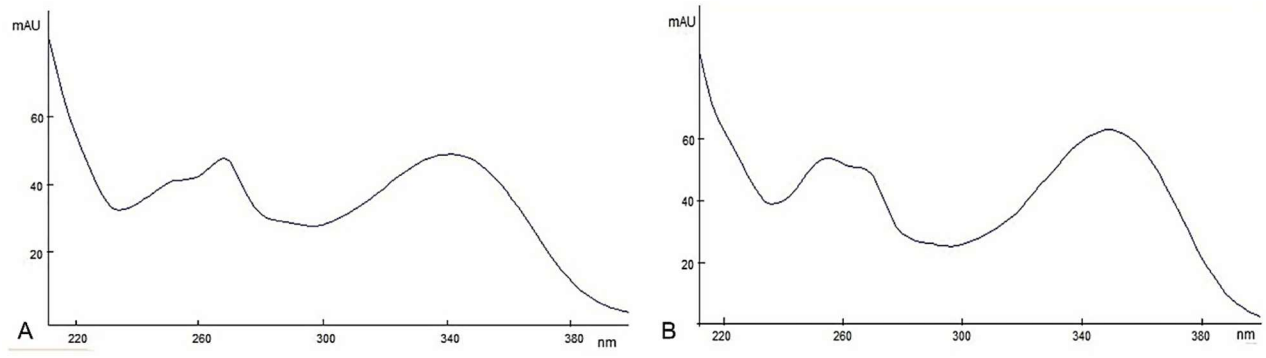

Fig. 8s. Absorption spectra of compound 9 (tr 7.7 min in gradient 2) of ***Nepeta densiflora*** (**A**) and compound 35 (tr 3.9 min in gradient 1) of ***Nepeta mariae*** (**B**).