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ANALYSIS OF SOME FAMILIES FROM CARL STUDNICZKA'S HERBARIUM

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Abstract: In the C. Studniczka's herbarium we have found new herbarium folder which contain herbarium samples from families: Salicaceae, Pinaceae, Ephedraceae, Taxaceae and Cupressaceae. Most of the analysed herbal material (117 herbarium sheets, with 323 samples of herbal plants) in this part of the C. Studniczka's herbarium were collected in Europe (105 herbarium sheets). According to the labels, the majority of herborized material was collected in the area of Austria (26 herbarium sheets). Most herbarium sheets belong to Flora von Wien collection (9). In reference to the part of Studniczka's herbarium which has already been analysed, there is one botanist or collector which is mentioned for the first time: Brotherston. Also collections listed for the first time are: Ex. Herb. A. Brotherston, Kelso and Herbarium R. Fritβe in Rybnik. Most herbarium sheets were collected by Studniczka himself (36). The oldest herbarium sheets dates from 1856, where as the newest ones date from 1902. The exact year of collection is missing from 13 herbarium labels.
Keywords: Studniczka's herbarium, Natural History Museum Split, Croatia

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Introduction

Since 2005, we have been working on Carl Studniczka's herbarium which can be found in the Natural History Museum in Split. As a botanist amateur, Carl Studniczka collected plants while he was traveling (1869-1904) and working as an officer (data are known from herbarium labels: wide surrounding area of Vienna and Wiener Neustadt in Austria; of Split, Hvar and Dubrovnik in Croatia; of Celje, Koper and Izola in Slovenia; of Kotor and Herceg Novi in Montenegro; of Olomouc and Leitmeritz in the Czech Republic; of Przemysl in Poland and at last the wide surrounding area of Trieste in Italy). The analysis has shown that this herbarium contains samples of the plants which were collected and sent to Studniczka by many botanists or collectors of that time.

Material and methods

In this paper we analysed the herbarium sheet from families: Salicaceae, Pinaceae, Ephedraceae, Taxaceae and Cupressaceae. From the labels of the herbarium sheets first, we copied the Latin name of the genus and the species; then the date, month and year of collection; followed by the collector (**A**-Ayasse, **Al**-Alioth, **B**-Baenitz, **Bm**-Brandmayer, **Bn**-Brendel, **Bo**-Borbas, **Br**-Brotherston, **C**-Carestia, **Ca**-Canby, **D**-Diedonné, **E**-Eggert, **En**-Engelmenn, **F**-Freyn, **Fo**-Fowler, **Fr**-Fritze, **G**-Gandoger,

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Gr-Grundl, **H**-Halácsy, **Ha**-Haussknecht, **He**-Heidenreich, **K**-Krenberger, **M**-Mabille, **Mo**-Moyer, **O**-Oberleitner **R**-Reuter, **Re**-Reverchon, **Ri**-Richter, **Ru**-Ruhmer, **S**-Studniczka, **Sa**-Sanio, **Sc**-Schemmann, **St**-Strobl, **Sw**-Schwarzl, **T**-Ttripet, **Tu**-Tullberg, **U**-unknown, **W**-Wahlstedt, **Z**-Zetterstedt, **ZW**-Zetterstedt et Wickbom) and the affiliation to the particular herbarium collection (F-Flora Algeriensis exsiccata, FA-Flora Austriae inf., FAu-Flora Austriaca, FB-Flora Böhmens, FBa-Flora Banatica, FBo-Flora Borussiae orientalis, FD-Flora Dalmatiens, FJ-Flora das Jura, FG-Flora Gallica exsiccata, FN-Flora von N. Oesterreich, FO-Flora von Obersteiermark, FP-Flora von oesterr. Polen, FS-Flora Süddalmatiens, FT-Flora von Triest, FTh-Flora Thuringiaca, FvB-Flora von Böhmen, FvP-Flora von Przemysl, FW-Flora von Wien, FWr-Flora von Wr Neustadt, H-Eggert, Herbarium Americanum, HB-Ex Herb. A. Brotherston Kelso, HE-C. Baenitz, Herbarium Europaeum, HF-Herbarium R. Fritβe in Rybnik, HZ-Herbier J.- E. Zetterstedt Plantes Pyrénéennes, PS-Plante Scandinavicae, S-Societa elvetica, SH-Société Helvétique). According to The Plant list and USDA plants Database we listed the name of the species in brackets; from the label we copied the numeric sign, name of the place where the plant had been found with altitude data if available and listed the number of herbarium samples in brackets.

Results and discussion

Fam. Salicaceae

1. Populus alba L. 4.1870. **S** FW (*P. alba* L.) häufig an der Donau b. W. (3)
2. P. angulata Ait. 14.4.1875. **E** H (*P. deltoides* Marshall) bei East St. Louis. Ills. (3)
3. P. balsamifera L. **U** (*P. balsamifera* L.) (1)
4. P. bellidifolia betulaefolia 5.1872. **S** FW (*P. nigra* L. subsp. *Betulifolia* / Pursh/ Wettst.) im botan. Garten (1)
5. P. monilifera Ait. 6.5.1874. **B** C. HE (*P. deltoides* Marshall subsp. *monilifera* /Aiton/ Eckenw.) Königsberg i. Pr.: Gemein (2)
6. P. nigra L. 25.4.1875. **Sc** HE (*P. nigra* L.) Rüdinghausen bs Annen. Angepflanz (3)
7. P. nigra L. 20.5.1895. **S** FWr (*P. nigra* L.) um Wr Neust. (1)
8. P. nigra L. 3.4.1902. **S** FT (*P. nigra* L.) Quellige Orte an der Miramarstrasse bei Barcola (4)
9. P. pyramidalis L. 25.4.1870. **S** FW (*P. nigra* L.) am Canal bei Simmering (1)
10. P. tremula L. 4.1866. **Sw** (*P. tremula* L.) Baronklaster abhang bei Bastin (4)
11. P. tremula L. 3.4.1893. **S** FN (*P. tremula* L.) Wälder bei Neudörfel (3)
12. Salix alba = S. vitellina L. 14.4.1876. **S** FD (*S. alba* L.var. *vitellina* /L./ Stokes) im Zuppathal bei Cattaro (2)
13. S. alba L. 7.5.1885. **S** FP (*S. alba* L.) an der strasse nach Buda b. Przemysl (3)
14. S. amygdalina L. 1863. **K** (*S. triandra* L.) Ufer der Thaya bei Raabs, NiedOesstr. (1)
15. S. amygdalina L. 5.5.1875. **A** (*S. triandra* L.) Genéve Bord des eaux (3)
16. S. amygdalina L. *S. discolor* Neilr. 5.1878. **H** FA (*S. triandra* L.) In nemoribus Danubii ad Viennam (2)
17. S. amygdalina L. 5.1882. **S** FvB (*S. triandra* L.) am Egerufer bei Theresienstadt (5)
18. Salix amygdalina L. 28.4.1885. **S** FP (*S. triandra* L.) Auen an der San b Przemysl (2)
19. S. angustifolia Wulf. 11.4.1878. **Ri** SH (*S. repens* L.) Budapest, Hungaria In locis arenosis Humidis (2)

20. S. arbuscula L. 17.6.1869. **St** FO (*S. arbuscula* L.) In der Alpenregion der Admonter Kalkgebirge (2)
21. S. arbuscula L. 12.7.1876. **A** (*S. arbuscula* L.) Kalbermatten (2)
22. Salix arbuscula L. 7.1877. **C** S (*S. arbuscula* L.) Alpe Olen ad Alagna (Valsesia) (2)
23. S. aurita L. 26.4.1885. **S** FP (*S. aurita* L.) Waldränder bei Lipowitza (5)
24. S. auritoides Kern. 14.4.1874. **G** FG (*S. purpurea* L.) No 419 Hab. in nemoribus prope Arnas (3)
25. S. capraea L. 20.5.1878. **F** (*S. caprea* L.) 86. Bohemia. Mensegebirge. Ad rivulos prope pag. Trčkadorf 700 m (3)
26. S. capraea L. 4.1882. **S** FB (*S. caprea* L.) Wäldchen am Radobil bei Leitmeritz (2)
27. S. caprea-nigricans **He** FBo (*S. myrsinifolia* Salisb.) Tilsit: in ericeto prope pineta "Puszinen" verbo lithuanico appellata (3)
28. S. caprea x viminalis **He** FBo (*S.* × *smithiana* Willd.) Tilsit: in ericeto prope pineta "Puszinen" verbo lithuanico dicta (2)
29. S. cinerea L. 10.4.1869. **F** (*S. cinerea* L.) Böhmen: Sümpfe bei Pardubic 215 m alluvienn (3)
30. S. cinerea L. v. *androgyna* 4.5.1871. **B** (*S. cinerea* L.) Koenigsberg: Lauther Mühle (4)
31. S. cinerea-nigricans **He** FBo (*S. cinerea* L.) Tilsit: in ericeto prope pineta "Puszinen" verbo lithuanico dicta (7)
32. S. cinerea × *nigricans* 5.8.1878. **Ha** FTh (*S. cinerea* L.) Ilm ufer b. Wiemar (3)
33. S. cinerea × *repens* 1878. **Ru** SH (*S. cinerea* L.) fl. de Berlin: Treptow (4)
34. S. cinereo - viminalis Wim. **A** (*S. cinerea* L.) Angle du Verges de Vessy Coté de Carouge prés Genéve (3)
35. S. cordata Muhl. 15.4.1875. **E** H (*S. eriocephala* Michx.) Am flüsse De Peres (4)
36. S. daphnoides Vill. 6.4.1873. **A** (*S. daphnoides* Vill.) Bord de l'Arve prés Genéve (2)
37. S daphnoides x caprea **Fr** HF (*S. daphnoides* Vill.) Wichura artefeeit, Rybnik (3)
38. S. depressa L. 4.5.1872. **Sa** (*S. lanata* L.) Prov. Preussen Lyck, auf der Karbojin (5)
39. S. forsteriana 5.1875. **Br** HB (*S. myrsinifolia* Salisb.) No 1188 Tweedside, Rosebank, Roxburgh (3)
40. S. friesiana Ands. 6.6.1876. **W** (*S. repens* L.) In rivulo ad Köpinge Scania (7)
41. S fragilis α viridis L. 8.4.1872. **S** FW (*S.* × *fragilis* L.) an der Liesing bei Unterlaa (7)
42. S. glauca L. 22.7.1873. **T** SH (*S. glauca* L.) Localite Piz Padella, Aped d'Engadine (Grisons) Statio pentes rocailleuses Altitude 2500 metres (2)
43. S. grandifolia Ser. 4.1874. **Al** FJ (*S. appendiculata* Vill.) Wysenfluh, Solothurner Jura (5)
44. S. grandifolia Ser. 6.1878. **H** FA (*S. appendiculata* Vill.) In alpinis Schneeberg 5000' (2)
45. S. hastata L. 17.7.1876. **R** (*S. hastata* L.) Les Grisons (Suisse) (5)
46. S. incana Schrk. 3.4.1871. **M** (*S. eleagnos* Scop.) l'Aude à Carcassonne (5)
47. S. incana Schk. 4.1875. **A** (*S. eleagnos* Scop.) Bords des camp à Genéve (3)
48. S. incano-daphnoides Wim. 19.4.1874. **A** (*S daphnoides* Vill.) Versant Nord du bois de la Bâtie prés Genéve (2)
49. S lanata L. 8.8.1870. **ZW** (*S. lanata* L.) Norvegia: Dovre, Kongsvold in pratis juxta viam (1)
50. S. lapponum L. f. *foliis lanceolatis pubescentibus* 26.8.1880. **F** (*S. lapponum* L.) Böhmen Riesengebirge Pantschewiese (3)

51. S. lapponum L. f. *glabra foliis latioribus* 28.8.1880. **F** (*S. lapponum* L.) 426. Böhmen Riesengebirge Bachufer am Pantschefall 1310 m (2)
52. S. longifolia Host 5.1873. **B** (*S. gmelinii* Pall.) Koenigsberg: Ballastplatz (4)
53. S. longifolia Host 5.5.1875. **B** HE (*S. gmelinii* Pall.) Königsberg i. Pr.: Ad ripas (Neue Bleiche) (3)
54. S. myrsinites L.*α jacquiniana* Koch 13.7.1897. **S** FWr (*S. myrsinites* L.) am Waxriegel d. Schneeberges (2)
55. S. myrtilloides L. 20.5.1878. **F** (*S. myrtilloides* L.) Bohemia. Mensegebirge. Toorfmoor bei Trčkadorf (3)
56. S. nigra Marsh. 14.5.1875. **E** H (*S. nigra* Marshall) St. Louis: Gräben am Old Bonhomme Wege (3)
57. S. nigricans Fr. 4.5.1872. **B** (*S. myrsinifolia* Salisb.) Koenigsberg: Trenker Waldhaus (3)
58. S. nigricans Fries 4.1897. **S** FWr (*Salix myrsinifolia* Salisb.) am Quell wabflüssen bei Wr. N. (4)
59. S. nigricans Fr. v. *leiocarpa* Patze 4.5.1872. **B** (*S. myrsinifolia* Salisb.) Koenigsberg: Am trenker Waldhause (2)
60. S. pedicellata Desf. 12.1878. **G** F (*S. pedicellata* Desf.) No 82 Hab. in ditione urbis Alger, loco dicto la Maison Carrée (4)
61. S. pentandra L. 5.1878. **H** FA (*S. pentandra* L.) In nemoribus Danubii ad Viennam (Prater) (2)
62. S. pentandra L. 22.7.1878. **F** (*S. pentandra* L.) 307. Böhmen. Opočno. Sümpfwiesen am Bromar (1)
63. S. purpurea L. 4.1872. **S** FW (*S. purpurea* L.) Bâche um Wien (4)
64. S. purpurea L. 4.1885. **S** FP (*S. purpurea* L.) Auen bei Przemysl (1)
65. S. purpurea L. 20.5.1897. **S** FWr (*S. purpurea* L.) an der Fischa b. Wr N. (1)
66. S. purpurea x viminalis 5.1872. **Ha** FTh (*S. purpurea* L.) Ilm ufer b. Wiemar (3)
67. S. pyrenaica Gouan. 6.1856. **Z** HZ (*S. pyrenaica* Gouan) Pyrénées centrales, port de Venasque (8)
68. S. pyrenaica Gou. 6.6.1873. **D** SH (*S. pyrenaica* Gouan) Station: Roches granitiques Localité: Pic d'Ayré, vallée de Barêges (Hautes Pyrénées) Altitude: 1800 mètres (6)
69. S. repens Wimm & Grab. 14.5.1872. S FW (*S. repens* L.) spf. Wiesen bei Laxenburg, Achau, Velm Moosbrunn (1)
70. S. repens L. 5.1872. **H** FA (*S. repens* L.) In pratis humidis ad Grossau prope Raabs (4)
71. S. repens L. v. *fusca* Sm. *pygmaea* Baenitz 7.1872. **B** HE (*S. repens* L.) Danzig. Ad mare baltic. (Zoppot) (4)
72. S. reticulata L. 21.7.1870. **St** FO (*S. reticulata* L.) Auf der Hohen-Warte bei Oberwölz (2)
73. S. retusa L. 1.7.1867. **O** (*S. retusa* L.) klainer ryegras bei Windischgarsten 6000' (2)
74. S. rubra Huds. 4.1885. **S** FP (*S.* × *rubra* Huds.) an der sand bei Przemysl (3)
75. S. russeliana Sm. 5.1875. **Tu** PS (*S.* × *fragilis* L.) Skåne: Alnarp (2)
76. S. talenceana Gdgr. 10.4.1876. **G** FG (*S. eleagnos* Scop.) No 420 Hab. secus rivulos prope Arnas (3)
77. S. viminalis L. 7.5.1885. **S** FvP (*S. viminalis* L.) an der Strasse nach Buda (5)

Fam. Pinaceae

78. Abies alba Mill. 12.1876. **H** FA (*A. alba* Mill.) In silvis montanis ad Viennam (3)
79. A. alba Mill. 18.5.1878. **F** (*A. alba* Mill.) Böhmen. Opočno. Wälder (4)
80. A. canadensis Mx. **U** (*Picea glauca* /Moench/ Voss) Canada (1)
81. A. larix Lam. 22.5.1881. **S** FB (*Larix decidua* Mill.) Wäldchen am Radobil bei Leitmeritz (4)
82. Picea erythrocarpa Purkyné 7.5.1878. **F** (*P. abies* /L./ H.Karst.) 57. Böhmen. Opočno. Wälder bildend (2)
83. Pinus alba Ait. **Bn** (*Picea glauca* /Moench/ Voss) Peoria Ill. (4)
84. P. halepensis Rand. 27.6.1874. **S** FS (*P. halepensis* Mill.) hügel bei Stobrez (3)
85. P. laricio Poir. 17.5.1872. **S** FW (*P. nigra* J.F.Arnold subsp. *laricio* Maire) am Leopoldiberg (1)
86. P. laricio Poir. 8.4.1874. **Bo** FBa (*P. nigra* J.F.Arnold subsp. *laricio* Maire) Swinicza, in montibus apricio (1)
87. P. laricio Poir. 6.1875. **H** HE (*P. nigra* J.F.Arnold subsp. *laricio* Maire) In montibus calc. ad Viennam Austriae inf. (2)
88. P. maritima Lamk. 5.1872. **G** FG (*P. pinaster* Aiton) Hab. Bayoune, Pyren occid. (1)
89. P. mughus Scop. 7. **Bm** FAu (*P. mugo* Turra) Schneeberg (3)
90. P. rubra Mill. 5.1868. **G** FG (*P. sylvestris* L.) Hab. Arnas 3
91. P. silvestris L. var. 14.5.1868. **G** FG (*P. sylvestris* L.) No 1096 Hab. Arnas (4)
92. P. silvestris L. 29.5.1881. **S** FB (*P. sylvestris* L.) Travčičer Sandwälder bei Theresienstadt (2)
93. P. strobus L. **Fo** (*P. strobus* L.) St. John. Canada (1)

Fam Cupressaceae

94. Callitris quadrivalvis Vent. 12.1878. **G** F (*Tetraclinis articulata* /Vahl/ Mast.) No 568 Hab. in ditione urbis Alger, loco dicto la Maison Carrée (2)
95. Cupressus lawsoniana Lodd. 18.4.1869. **G** FG (*Chamaecyparis lawsoniana* /A.Murray bis/ Parl.) No 245 Hab. Arnas, cult (1)
96. C. sempervirens L. 12.3.1873. **S** FD (*Cupressus sempervirens* L.) üm Castelnuovo in Gärten aüf bei Spalato (3)
97. Juniperus communis L. 7.1876. **H** FA (*J. communis* L.) In subalpinis ad Reichenau (3)
98. J. comunis L. 30.4.1901. **S** FT (*J. macrocarpa* Sm.) üm Barcola (2)
99. J. macrocarpa Sibthp. 22.7.1874. **F** (*J. macrocarpa* Sm.) Istrien. Umgebung von Pola Immergrüne Gebüsche Bodenunterlage Kalk Seehöhe 15 m (1)
100. J. nana Willd. 5.7.1874. **A** (*J. communis* L. var. *saxatilis* Pall.) Dans le Jura, an Reculet (Ain) (1)
101. J. nana W. 23.6.1875. **S** FD (*J. communis* L. var. *saxatilis* Pall.) auf dem Biokovo 5500' (1)
102. J. oxycederus L. 18.12.1873. **S** FD (*J. macrocarpa* Sm.) überall in Dalmatien (Vermacz) bei Cattaro (3)
103. J. phoenicea L. 29.9.1872. **S** FD (*J. phoenicea* L.) Bestandtheil des Gesträuches bei Punta d' Ostro & Traste (3)
104. J. sabinoides Ait. **En** (*J. ashei* J.Buchholz) Louisiana (2)
105. J. sabinoides Ait. 30.4.1901. **S** FT (*J. ashei* J.Buchholz) Barcola (2)
106. J. virginiana L. **Ca** (*J. virginiana* L.) Delaware (1)

107. Thuja occidentalis L. **Mo** (*T. occidentalis* L.) Quakertown, Pennsylvania (2)
108. T. occidentalis L. 30.4.1901. **S** FvT (*T. occidentalis* L.) Miramarstrasse (3)
109. T. orientalis L. 1869. **S** FW (*Platycladus orientalis* /L./ Franco) in Gärten um Wien (2)

Fam. Ephedraceae
110. Ephedra distachya L. 15.6.1872. **F** (*E. distachya* L.) Béziers sur un coteau élevé (1)
111. E. distachya L. 8.1875. **S** FD (*E. distachya* L.) an Feldmauern um Spalato (0)
112. E. fragilis Desf. 19.4.1874. **S** FD (*E. fragilis* Desf.) auf Felsen bei Toretta nächst Spalato (1)
113. E. helvetica C. A. Mey. 29.5.1875. **Al** (. *distachya* L. subsp. *helvetica* /C.A.Mey./ Asch. & Graebn.) Tourbilon, Sitten wallis (4)
114. E. monostachya L. 4.5.1870. **F** (*E. distachya* L.) Ungarn. Bergabhänge bei Ofen. Dolomit 230 m (4)
115. E. monostachya L. 5.1874. **Gr** (*E. distachya* L.) Aüf Sandhügeln bei Dorogh nächst Gran in Ungarn (2)
116. E. villarsii G. et G. 10.6.1873. **Re** (*E. major* Host) Ribieres (3)

Fam. Taxaceae
117. Taxus baccata L. 7.4.1870. **S** FW (*T. baccata* L.) cult. im Belvedere (2)

Total number of the herbarium scheets in analysed families is 117 (with 323 samples of herbal plants). The majority of the plants was collected in Europe (105 herbarium sheets), 9 sheets originate from North America, two sheets originate from Africa, and for one we do not know where it was collected.

Most of the herbarium samples were collected in the area of Austria (26 herbarium sheets) and: Czech Republic (13), France (12), Switzerland (10), Poland (9), Russia (9), USA (7), Croatia (5), Italy (5), Germany (4), Montenegro (4), Hungary (3), Algeria (2), Sweden (2) and Canada (2). One herbarium sheet was collected in: Romania, Norway, GB and for one herbarium sheet we do not know the state in which it was collected. According to the affiliation to a particular herbarium collection in analysed familys or their parts the most represented is Flora von Wien with 9 herbarium sheets. This is followed by other collections, such as: Flora Dalmatiens (including Flora Süddalmatiens collection) (8), E Flora Austriaen inf. (6), Flora Gallica exsiccata (6), Flora von oester. Polen (including Flora von Przemysl) (6), C. Baenitz Herbarium Europaeum (5), Flora Böhmens (including Flora von Böhmen) (4), Flora von Triest (4), Flora von Wr. Neustadt (4), Eggert Herbarium Americanum (3), Flora Borussiae orientalis (3), and others. There are 40 herbarium sheets that are unmarked and therefore we do not know which herbarium collection they belong to. In the part of the herbarium which has already been analysed (compare with 1, 2, 3, 4, 5, 6, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43), there are 2 collections which is mentioned for the first time: Ex. Herb. A. Brotherston, Kelso and Herbarium R. Fritβe in Rybnik.

Most of the samples of herbarium plants were collected by Studniczka himself (36 herbarium sheets), while others were sent to him by: Freyn (11), Gandoger (8), Halácsy (7), Ayasse (7), Baenitz (7), Eggert (3), Heidenreich (3), and others. In the part

of the herbarium which has already been analysed (compare with 1, 2, 3, 4, 5, 6, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 41, 42), there is one botanist or collector of the herbal material which is mentioned for the first time: Brotherston.

The oldest herbarium sheet dates from 1856, where as the newest ones date from 1902. The vast majority of herbarium sheets (75), was collected during the period from 1870 to 1880. The exact year of collection is missing from 13 herbarium labels.

According to Studniczka, within 117 herbarium sheets there are 11 genera with 82 species, and 7 varietas.

In this paper, there is only one herbarium scheet from Romania. According to labels, in the part of the Studniczka's herbarium which has already been analysed, 161 herbarium scheets were collected in Romania. Samples of herbal plants from Romania were collected from: Borbás, Barth, Freyn, Göth, Janka, Brandmayer, Lojka and others.

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