Introduction

*Colchicum* L. is a taxonomically very difficult genus of the family Liliaceae. The ca. 100 species of the genus *Colchicum* (incl. *Merendera* Ram. and *Bulbocodium* L.) are unevenly distributed. Most species are confined to limited regions, some of which are very rich in species. The high frequencies of species and of endemics in Turkey and the Balkans indicate that these regions are major centres of diversity and speciation (Persson, 1993). *Colchicum* is represented by 36 taxa (35 species), of which 14 are endemic in Turkey (Brickell, 1984; Persson, 2000; Persson, 2001; Akan & Eker, 2005). Twenty-eight of these taxa are autumn-flowering species, whereas the remaining 8 are early-spring flowering species. In addition, 25 of them are hysteranthous species (leaves undeveloped at anthesis) and 11 of them synanthous species (leaves partly developed at anthesis).

Various local names are used for *Colchicum* species. These names are “Güzçiðemi”, “Göçkovan”, “Öksüz çiçegi”, “Kalkgit”, “Acı çiçem”, “Ayı çiçemi”, “İlboðan”, “Likofor”, “Ligoser”, and “Tarhana çiçegi” (Baytop, 1994). In addition, the names “Göç çiçegi”, “Koyun döðü”, and “Avu” were determined by O.D. Düfened during field studies.

Many kinds of alkaloids have been identified in *Colchicum* and *Merendera* plants. The major alkaloid of...
Colchicum is colchicine (Simánek et al., 1990). The use of colchicine for treatment of gout was propounded by different researchers. Moreover, colchicine has an inhibitory effect on the growth of certain tumours in plants and animals. Colchicine acts on the mitotically active cell producing metaphasic arrest, often resulting in a doubling of the chromosome number and giving rise to polyploids (Fell & Ramsden, 1967).

Colchicum species contain poisonous alkaloids, such as colchicine (Baytop, 1999). When these poisonous alkaloids are accidentally ingested by humans and animals, they cause very serious health problems such as serious liver damage and finally death. All parts of Colchicum species have been shown to contain colchicine, but seeds and corms contain more colchicine than other plant parts. Numerous studies have been carried out by different researchers on colchicine and other chemical constituents of Colchicum species (Sütlüpınar et al., 1988; Simánek et al., 1990; Abu Zarga et al., 1991; Ondra et al., 1995; Maier & Zenk, 1997; Nasreen et al., 1997; Kalinin & Snieckus, 1998; Rosso & Zuccaro, 1998; Rueffer & Zenk, 1998; Sütlüpınar, 2002).

The first detailed morphological properties of the genus Colchicum were reported by Brickell (1984). That study was followed by a number of investigations (Küçüker, 1985; Baytop, 1987; Küçüker & Çelebioğlu, 1988; Küçüker, 1990a, 1990b, 1992; Engel & Küçüker, 1994; Küçüker, 1995; Persson, 1999a, 1999b, 2001). However, so far there have been no detailed morphological studies on all Colchicum species distributed in the Mediterranean region.

In this research, detailed morphological features of Colchicum species were studied and useful identification keys (for both flowering material and leafing-fruiting material) were prepared for all Colchicum species in the Mediterranean region of Turkey.

Materials and Methods

Plant samples were collected from the Mediterranean region in Turkey between 2000 and 2004. Colchicum specimens for morphological studies were dried according to standard herbarium techniques and preserved in the Akdeniz University herbarium (AKDU). The Monograph of Colchicum genus (Stefanov, 1926), Flora of Turkey (Brickell, 1984; Persson, 2000), and the other related floras (Butcher, 1961; Mouterde, 1966; Savulescu & Nyárády, 1966; Halacsy, 1968; Lanfranco, 1977; Nasir, 1979; Brickell, 1980; Pignatti, 1982; Meikle, 1985; Townsend et al., 1985; Feinbrun-Dothan, 1986; Zaffran, 1990; Persson, 1992) were utilised in the identification of the specimens and confirmed by comparison with the herbarium samples of the examined species in the ANK, BULU, GAZI, HUB, ISTE, ISTF, VANF, and AKDU herbaria. The specimens were evaluated according to IUCN threat categories (Ekim et al., 2000; IUCN, 2001). Authors of plant names are written according to Brummitt & Powell (1992). The abbreviations used in the text are as follows: CR = Critically endangered; EN = Endangered; LC = Least concern.

Results

Autumn-flowering Colchicum L. species in the Mediterranean region of Turkey

1. Colchicum boissieri Orph.
2. Colchicum baytopiorum C.D.Brickell
3. Colchicum stevenii Kunth
5. Colchicum heldreichii K.M.Perss.
6. Colchicum decaisnei Boiss.
7. Colchicum balansae Planch.
8. Colchicum variegatum L.
9. Colchicum ciliicum (Boiss.) Dammer
11. Colchicum davisi C.D.Brickell
13. Colchicum imperatoris-friderici Siehe ex K.M.Perss.
15. Colchicum polyphyllum Boiss. & Heldr.

Spring-flowering Colchicum L. species in the Mediterranean region of Turkey

1. Colchicum minutum K.M.Perss.
2. Colchicum serpentinum Woron. ex Miscz.
4. Colchicum triphyllum Kunze
5. Colchicum burtii Meikle
Key to Species

A- Key to flowering material of

1. Flowering period January to June

2. Corms soboliferous, with horizontal underground stolons
   3. minutum

2. Corms erect, without underground stolons

3. Filaments densely pilose near the base
   8. burtii

3. Filaments glabrous

4. Corm tunic membranous
   5. Flowers campanulate; perianth tube purplish-pink in upper part
      7. szovitsii

5. Flowers stellate or narrowly funnel-shaped; perianth tube wholly cream or white
   5. serpentinum

4. Corm tunic papery or subcoriaceous

5. Flowers campanulate; perianth tube purplish-pink in upper part

    6. szovitsii

6. Leaves synanthous, partly developed at anthesis or appearing immediately after anthesis

7. Corm with a neck
   4. stevenii

7. Corm without a neck
   2. baytopiorum

6. Leaves hysteranthous, undeveloped at anthesis or subsynanthous

8. Perianth segments strongly tessellated

9. Perianth segments glabrous along ridges of filaments channels; anthers purple, purplish-black or purplish-brown
   13. variegatum

9. Perianth segments pubescent along ridges of filaments channels; anthers yellow

10. Anthers 10-16 mm; stigmatic surface decurrent for at least 2-5 mm
    16. davisii

10. Anthers up to 10 mm; stigmatic surface punctiform or decurrent for at least 0.4-1 mm
    14. ciliicum

8. Perianth segments not or slightly tessellated

11. Corm soboliferous, with horizontal underground stolons

12. Leaves hysteranthous; anthers with membranous margin
    1. boissieri

12. Leaves synanthous or subsynanthous; anthers without membranous margin
    2. baytopiorum

11. Corm erect, without underground stolons

13. Neck absent, if present up to 2 cm long

14. Leaves hysteranthous; flowers 2-25 (-30); filament channels sparsely papillose to shortly pubescent

20. polyphyllum

14. Leaves synanthous or subsynanthous; flowers 1-5; filament channels glabrous

2. baytopiorum

13. Neck at least 2 cm or more

15. Neck 20-50 cm; cataphyll almost as long as neck
   12. balansae

15. Neck up to 20 cm; cataphyll longer than neck

16. Styles straight or slightly hooked at apex

17. Filament channels glabrous or puberulous at least on margin

18. Flowers campanulate; filament channels with 1-3 filiform teeth at apex
   15. sanguicolle

18. Flowers funnel-shaped; filament channels without filiform teeth at apex
   11. decaisnei

17. Filament channels wholly puberulous

19. Anthers with membranous margin
   9. kotschyi

19. Anthers without membranous margin
   14. ciliicum

16. Styles distinctly hooked at apex

20. Neck with thin fibres

17. dolichantherum

20. Neck without fibres

21. Filament channels shallow, glabrous or sometimes pubescent only at base
    10. heldreichii

21. Filament channels distinct and completely pubescent

22. Perianth segments slightly tessellated

23. Outer tunic of corm membranous; anthers up to 10 mm
    16. davisii

23. Outer tunic of corm papery or subcoriaceous; anthers at least 8 mm
    19. inundatum

22. Perianth segments not tessellated

24. Filaments white or cream in lower part, usually light- pink in upper part
   18. imperatoris-friderici

24. Filaments wholly white
   9. kotschyi
B- Key to leafing and fruiting material of *Colchicum* L. species in the Mediterranean region of Turkey

1. Leaves numerous (usually 10-25) 20. polyphyllum
   1. Leaves up to 10 or less
      2. Leaves pilose or hispid on margins and dorsal surface
         3. Outer tunics of corm with prominent longitudinal corrugations; capsule scabrid-pilose at apex 8. burtii
         4. Neck absent; leaves width up to 0.8 (-1) cm 5. serpentinum
         4. Neck present; leaves width 1-5 (-7) cm 11. decaisnei
      2. Leaves ciliate, scabrous or glabrous on margins and dorsal surface
         5. Corms soboliferous, with horizontal underground stolons
            6. Leaves 20-40 x 1.5-7 cm at maturity, narrowly or broadly lanceolate 2. baytopiorum
            6. Leaves 7-20 x 0.2-1 (-1.5) cm at maturity, linear or linear-lanceolate 7. minutum
            7. Capsule length at least 1.5 cm 1. boissieri
      5. Corms erect, without underground stolons
         8. Leaves' margins conspicuously undulate 13. variegatum
         8. Leaves' margins inconspicuously undulate or flat 9. Corm with a neck
            10. Leaves length at least 20 cm at maturity; narrowly or broadly lanceolate 2. baytopiorum
            10. Leaves length up to 20 cm at maturity; linear, linear-lanceolate or ligulate 11. Outer tunics of corm membranous
               7. triphyllum
               11. Outer tunics of corm papery or subcoriaceous
                  12. Leaves width up to 0.8 (-1) cm at maturity; capsule length up to 1.5 (-2) cm 5. serpentinum
                  12. Leaves width at least 1 cm at maturity; capsule length at least 2 cm 6. szovitsii
                  16. Cataphyll not reddish-purple
                     21. Leaves at least 4 19. inundatum
                     21. Leaves up to 4
                        22. Corm narrowly ovoid to elliptic-ovoid; seeds up to 4 mm diam. 9. kotschyi
                        22. Corm elliptic to oblong-ovoid or asymmetric ovoid; seeds at least 4 mm diam. 14. cilicicum
                       16. davisii
Species Descriptions

1. *Colchicum boissieri* Orph. in Atti Congr. Bot. Firenze 1874: 29 (nomen), 30–31 (descr.) (1876). (Figure 1).

Typus: [Greece] vers l’automne sur le mont Taygete dans le Péloponèse, Orphanides 30 (holo. ATHU, iso. GI WU).


Description: Corm soboliferous, 1.5-6.5 (-7) x 0.3-1.5 cm, asymmetric ovoid or oblong-ovoid, often with tooth-like projections; tunics membranous, pale brown to reddish-brown; neck 1-4.5 (-5.5) x 0.3-0.6 (-0.8) cm, deciduous. Cataphyll 3-15 x 0.1-0.5 (-0.6) cm, white or yellowish-white. Leaves hysteranthous, 2-3, erect, suberect or arcuate, 8-20 (-22) x 0.2-1 cm, linear, obtuse to acute, margins glabrous or partly ciliate. Flowers 1-2 (-3), campanulate to narrowly funnelformed; perianth tube exceeding the cataphyll by 1.5-10 cm, white or cream; segments 2-5 (-5.5) x 0.5-1.6 (-1.8) cm, elliptic to oblong, each segment 10-18 (-20) veins, bright pink to purplish-pink, not tessellated, subacute to obtuse, not cucullate, filament channels distinct, with filiform teeth at apex, glabrous. Stamens 1/3 to 1/2 of perianth limb in length; filaments 8-25 mm, white or cream, with swollen yellow base, glabrous; anthers 4-8 (-10) x 1-1.5 mm, yellow, with membranous margin. Styles as long as or longer than stamens, straight or slightly curved at apex, white, stigmas punctiform. Capsule 1.5-2 x 0.8-1 cm, elliptic to oblong, glabrous, rostrate; seeds 1.5-2.5 mm diam., almost globose or ovoid, reddish-brown. Flowering time, September-December; Leaves and fruiting time, February-May.

Similar species: This species is similar to *C. minutum* K.M.Perss., *C. munzurense* K.M.Perss., and *C. leptanthum* K.M.Perss. Comparison of morphological characteristics between these species is shown in Table 1.

Habitat: Stony slopes, under and clearings of *Cedrus libani*, *Pinus-Juniperus* scrubs.

Altitudinal range: 400-1500 m.

Turkey distribution: West and South Anatolia.

World distribution: South Greece.

Phytogeographical status: East Mediterranean element.

Flora of Turkey records: A1 Balıkesir: Marmara Adası, above Çınarlıköy, 650 m, Tuzlacı (ISTE 38381, fl.). B1 Balıkesir: Kaz Dağı, Beypınar to Kosara, 700 m, A. Baytop (ISTE 18789, fl.). İzmir: Boz Dağı, Büyük Çavdar Yaylası, 1400 m, T. Baytop (ISTE 45906, fl.). Manisa: Manisa Dağı, Kirbağlı oluk, 1250 m, T. Baytop (ISTE 36666, leaf & fr.). C1 Aydın: Samsun Dağı, 400 m, A. Baytop (ISTE 26795, fl.). C4 Konya: nr. Bozkır, Beyşehir to Karaman, 1070 m, Guichard T/175/60 (fl.).

### Table 1. Comparison of morphological characteristics between *C. boissieri*, *C. minutum*, *C. munzurense*, and *C. leptanthum*.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th><em>C. boissieri</em></th>
<th><em>C. minutum</em></th>
<th><em>C. munzurense</em></th>
<th><em>C. leptanthum</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Corm</td>
<td>asymmetric ovoid or oblong-ovoid (1.5-6.5 (-7) cm long)</td>
<td>mostly subterete (1-5 cm long)</td>
<td>narrowly ovoid to ellipsoid ovoid (1.2-2 cm long)</td>
<td>--</td>
</tr>
<tr>
<td>Tunics</td>
<td>pale brown to reddish-brown</td>
<td>yellowish red-brown to yellowish brown</td>
<td>glossy light yellowish-brown to duller mid-brown</td>
<td>yellowish-brown to pale brown</td>
</tr>
<tr>
<td>Neck</td>
<td>1-4.5 (-5.5) x 0.3-0.6 (-0.8) cm</td>
<td>absent</td>
<td>mostly absent</td>
<td>mostly absent</td>
</tr>
<tr>
<td>Cataphyll</td>
<td>3-15 cm long</td>
<td>5-10 (-20) cm long</td>
<td>5-8.5 cm long</td>
<td>6-8 cm long</td>
</tr>
<tr>
<td>Leaves</td>
<td>hysteranthous obtuse to acute</td>
<td>synanthous subobtuse</td>
<td>synanthous subacute to obtuse</td>
<td>synanthous subacute</td>
</tr>
<tr>
<td>Flowers</td>
<td>campanulate to narrowly funnel-shaped</td>
<td>only narrowly funnel-shaped</td>
<td>only funnel-shaped</td>
<td>--</td>
</tr>
<tr>
<td>Perianth tube</td>
<td>exceeding the cataphyll by 1.5-10 cm, white or cream</td>
<td>exceeding the cataphyll by 1-4 (-6) cm, only white</td>
<td>exceeding the cataphyll by 2.5-5 (-7) cm white to yellowish white</td>
<td>exceeding the cataphyll by 4-7 cm whitish</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>2.5 (-5.5) x 0.5-1-6 (-1.8) cm elliptic to oblong, with 10-18 (-20) veins bright pink to purplish-pink</td>
<td>1.3-5 x 0.1-0.5 cm linear to oblong with 5-7 (-9) veins white</td>
<td>1.8-3 cm x 0.25-0.75 cm narrowly oblong to narrowly oblanceolate with 7-11 veins white to pale purplish lilac</td>
<td>1.3-1.9 cm x 1-3 mm linear with 5-9 veins white</td>
</tr>
<tr>
<td>Filament channels</td>
<td>distinct, with filiform teeth at apex</td>
<td>shallow, without filiform teeth at apex</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Stamens</td>
<td>1/3-1/2 as long as perianth limb</td>
<td>1/2-2/3 as long as perianth limb</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Filaments</td>
<td>8-25 mm, white or cream with swollen yellow base</td>
<td>4-12 mm, only white with swollen orange yellow base</td>
<td>yellowish white to pale yellow with slightly swollen dull yellow to green-yellow base</td>
<td>pale yellow with thickened brownish-yellow base</td>
</tr>
<tr>
<td>Anthers</td>
<td>4-8 (-10) mm long with membranous margin yellow</td>
<td>2-4.5 (-5) mm long very thin membranous or without membranous margin bright yellow to dark grey</td>
<td>2.5-3 mm long dark purplish-grey to chocolate-brown or blackish</td>
<td>2.5-4 mm long yellow or greyish</td>
</tr>
<tr>
<td>Capsule</td>
<td>1.5-2 x 0.8-1 cm</td>
<td>0.8-1 (1.5) x 0.4-0.7 cm</td>
<td>1-1.5 x 0.7-1 cm</td>
<td>unknown</td>
</tr>
<tr>
<td>Seeds</td>
<td>reddish-brown</td>
<td>bright brown to dark brown</td>
<td>brown</td>
<td>unknown</td>
</tr>
<tr>
<td>Flowering time</td>
<td>September-December</td>
<td>January-March</td>
<td>February-April</td>
<td>early spring</td>
</tr>
<tr>
<td>Leaves and fruiting time</td>
<td>February-May</td>
<td>April-May</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
KazDağı, Beypınar to Koşara, 700 m, 17.x.1970, A. Baytop (ISTE 18789) - Marmara island, Çakıllı hill, rocky place, 650 m, 27.x.1977 (ISTF 39070). Manisa: Kırbağı oluk, 1250 m., 23.iv.1977, Baytop (ISTE 36666, ISTF 39072) - Manisa mountain, Sultan Plateau, 1250 m, 27.v.1980, Sültüpinar (ISTE 44275) - Manisa mountain, Sultan Plateau, 1250 m, 4.x.1976, T. Baytop & H.J. Leep (ISTF 39076) - Manisa mountain, Sultan Plateau, 1250 m, 27.v.1980, Sültüpinar (ISTE 44275) - Manisa mountain, Sultan Plateau, 1250 m, 6.x.2000, L. Şık (ISTF 37439) - Spil mountain, Atalani, grassland, 1250 m, 29.iii.2001, E. Sevgi (ISTF 38490) - Spil mountain, Atalani, 1250 m, 9.x.1991, H. Karaca, A. Güner (HUB) - Akçay to Kasaba, 29 km to Kasaba, under the Cedrus libani forest, 1400 m, 7.xi.1976, T. Baytop (ISTE 36255, ISTF 39073) - Akçay to Kasaba, 29 km from Kasaba, Pinus & Quercus, 1100 m, 21.iii.1977, T. Baytop (ISTF 39075) - Akçay to Kasaba, Kemer village, 7.xi.1976, T. Baytop (ISTF 30073) - Elmali, Cedrus Research Forest, opening of Cedrus libani, 1400-1500 m, 28.ix.2001, O.D. Düşen (2444), S. Düşen, İ.G. Deniz (AKDU) - Elmali, Cedrus Research Forest, around Şah Ardiç, clearings of Cedrus libani, 1500-1513 m, 9.x.2002, 36°35’ 186° N, 29°03’ 614° E, O.D. Düşen (2569), S. Düşen, İ.G. Deniz (AKDU) - Elmali, Cedrus Research Forest, clearings of Cedrus libani, 1300-1400 m, 24.v.2003, O.D. Düşen (2444a), S. Düşen (AKDU) - Elmali, Çığlıkara, 3-4 km to Dokuzgöl, openings of forest, 1830 m, 18.xi.2003, 36° 32’ 156° N, 29° 50’ 656° E, R.S. Göktürk & İ.G. Deniz (1001) (AKDU). C5 İçel: Fındıkpınar to Arslanköy, stony slopes, 1400 m, 3.xi.1983, T. Baytop (ISTF 39069).

2. **Colchicum baytopiorum** C.D.Brickell in Notes R.B.G. Edinb. 41: 49 (1983). (Figure 2).

Typus: Turkey C3 Antalya: Termessos, 550 m., 7.xi.1976, T. Baytop ISTE 36255 (holo. ISTE, fl.). Leaves and capsules described from Brickell 1380 (K).

= *C. hiemale* Siehe in sched. non Freyn (1897).


**Description:** Corm erect or soboliferous, 1.5-6 (-7) x 0.8-3 (-3.5) cm, narrowly ovoid to subglobose, irregular in shape; tunics membranous or papery, reddish-brown to brown; neck absent. Cataphyll 3-15 x 0.3-1.7 cm, white, cream, or yellowish-white. Leaves synanthous or subsynanthous, 3 (-4), suberect to recurving, extending 1-10 cm from spathe at anthesis, 20-40 x 1.5-7 cm, narrowly to broadly lanceolate, obtuse to acute, margins slightly undulate or entire, glabrous. Flowers 1-5 (-8), funnel-shaped to campanulate; perianth tube exceeding the cataphyll by 1.5-13 (-15) cm, white or cream; segments 1.5-4.5 x 0.4-1.2 (-1.4) cm, elliptic to lanceolate or oblong-lanceolate, each segment 7-15 (-18) veins, bright pink to purplish-pink, not tessellated, acute to obtuse, not cucullate, filament channels shallow, glabrous. Stamens 1/2 to 2/3 of perianth limb in length;

![Figure 2. Distribution of Colchicum baytopiorum (I) in Turkey.](image-url)
filaments 8-20 (-22) mm, white, with swollen orange yellow base, glabrous; anthers 3-7 x 0.8-1 mm, yellow, without membranous margin. Styles as long as or longer than stamens, straight, white, stigmas punctiform. Capsule 1.5-2.5 (-3) x 0.8-1.5 cm, elliptic to ovoid, light brown to reddish-brown or dark brown with faint to strong reticulations and dots, apiculate, glabrous; seeds 2-4 mm diam., subglobose, sometimes flattened laterally, light to dark brown. Flowering time, September-November; Leaves and fruiting time: February-May.

**Similar species:** The specimens of this species were described as a new species by C.D.Brickell from Termessos in 1983 (Brickell, 1984). *C. baytopiorum* is similar to *C. cupanii* Guss., which is distributed in Albania, Crete, France, Greece, Italy, and Sicily, and *C. boissieri*. Comparison of morphological characteristics between these species is shown in Table 2.

**Habitat:** Opening of maquis, under and clearings of *Pinus* and *Quercus* woodland.

**Altitudinal range:** 50-1000 m.

**Turkey distribution:** South-West Anatolia. Endemic (LC).

**Phytogeographical status:** East Mediterranean element.

**Flora of Turkey records:**

C3 Antalya: nr Termessos, 550 m, T. Baytop & Leep (ISTE 33890, fl.) ibid., 900-1000 m, Brickell 1380 (leaf & fr.) ibid., 900 m, Pasche 73-4 (photo), cult. Brickell 16.x.1976 (fl.). d. Kemer, Kesmeboğaz to Sumrakşehri, 50-600 m, Peşmen & Güner 4768 (leaf & fr.). Isparta: above Anamas, Siehe 1911: 87 (fl.).

### Table 2. Comparison of morphological characteristics between *C. baytopiorum*, *C. cupanii*, and *C. boissieri*.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th><em>C. baytopiorum</em></th>
<th><em>C. cupanii</em></th>
<th><em>C. boissieri</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Corm</td>
<td>usually erect, sometimes soboliferous</td>
<td>erect</td>
<td>soboliferous</td>
</tr>
<tr>
<td></td>
<td>1.5-6 (-7) x 0.8-3 (-3.5) cm</td>
<td>1-2 x 1-1.5 cm</td>
<td>1.5-6.5 (-7) x 0.3-1.5 cm</td>
</tr>
<tr>
<td></td>
<td>narrowly ovoid to subglobose</td>
<td>ovoid</td>
<td>asymmetric ovoid or oblong-ovoid</td>
</tr>
<tr>
<td>Tunics</td>
<td>membranous or papery</td>
<td>coriaceous</td>
<td>membranous</td>
</tr>
<tr>
<td></td>
<td>reddish-brown to brown</td>
<td>dark brown</td>
<td>pale brown to reddish-brown</td>
</tr>
<tr>
<td>Neck</td>
<td>absent</td>
<td>with a short neck</td>
<td>1-4.5 (-5.5) x 0.3-0.6 (-0.8) cm</td>
</tr>
<tr>
<td>Leaves</td>
<td>synanthous or subsynanthous</td>
<td>synanthous</td>
<td>hysteronanthous</td>
</tr>
<tr>
<td></td>
<td>suberect to recurving</td>
<td>---</td>
<td>suberect or arcuate</td>
</tr>
<tr>
<td></td>
<td>3 (-4)</td>
<td>2 (-3)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>20-40 x 1.5-7 cm</td>
<td>up to 15 x 1-1.8 cm</td>
<td>9-20 (-22) x 0.2-1 cm</td>
</tr>
<tr>
<td></td>
<td>narrowly to broadly lanceolate</td>
<td>linear to linear-lanceolate</td>
<td>linear</td>
</tr>
<tr>
<td>Flowers</td>
<td>1.5 (-8)</td>
<td>1.5 (-12)</td>
<td>1-2 (-3)</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>1.5-4.5 x 0.4-1.2 (-1.4) cm</td>
<td>up to 2.5 x 0.3-0.5 cm</td>
<td>2.5 (-5.5) x 0.5-1.6 (-1.8) cm</td>
</tr>
<tr>
<td></td>
<td>elliptic to lanceolate or oblong-lanceolate.</td>
<td>narrowly elliptical</td>
<td>elliptic to oblong</td>
</tr>
<tr>
<td>Filaments</td>
<td>8-20 (-22) mm</td>
<td>up to 12 mm</td>
<td>8-25 mm</td>
</tr>
<tr>
<td>Anthers</td>
<td>3-7 mm</td>
<td>2-3 mm</td>
<td>4-8 (-10)</td>
</tr>
<tr>
<td></td>
<td>without membranous margin</td>
<td>---</td>
<td>with membranous margin</td>
</tr>
<tr>
<td>Capsule</td>
<td>1.5-2.5 (-3) cm long</td>
<td>c. 1.5 cm long</td>
<td>1.5-2 cm long</td>
</tr>
<tr>
<td></td>
<td>elliptic to ovoid</td>
<td>oblong</td>
<td>elliptic to oblong</td>
</tr>
<tr>
<td>Seeds</td>
<td>2-4 mm diam.</td>
<td>---</td>
<td>1.5-2.5 mm diam.</td>
</tr>
<tr>
<td></td>
<td>light to dark brown</td>
<td>---</td>
<td>reddish-brown</td>
</tr>
</tbody>
</table>

3. **Colchicum minutum** K.M.Perss. in Edinb. J. Bot. 56: 90, f. 1C-D, 2A (1999). (Figure 3).

Typus: Turkey C3 Antalya: 10 km from Gündoğmuş to Manavgat, Quercus coccifera scrub, slight depression in deep, moist terra rossa, 1000 m, 19.iv.1987, K. Persson 431 (holo. GB!).

= **C. hiemale** Siehe in sched. ad Fl. Orient. No. 87, nom. nud., non Freyn (1897).

= **C. issicum** Siehe 1.c. No. 97, nom. nud.

= **C. psaridis** sensu Brickell in Davis (ed.), Fl. Turk. 8: 335 (1984), non Heldr. ex Hal. (1904).

Description: Corm soboliferous, 1-5 x 0.2-0.7 (-1) cm, with 2 (or more) usually shoot-bearing lobes, mostly subterete; tunic membranous, yellowish-brown to bright brown; neck absent. Cataphyll 5-10 (-20) x 0.2-0.7 cm, white. Leaves synanthous, 3 (-4), erect to arcuate or spreading, extending 1-8 cm from cataphyll at anthesis, 7-20 x 0.2-1 (1.5) cm, linear to linear-lanceolate, channelled with a distinct midvein and a cucullate at the apex, subobtuse to obtuse, margins entire, glabrous. Flowers 1-2 (-4), funnel-shaped; perianth tube exceeding the cataphyll by 1-4 (-6) cm, white, filiform; segments 1-3.5 x 0.1-0.5 cm, linear to oblong, channelled, each segment 5-7 (-9) obscure veins, white to bright pink or sometimes purplish-pink at the base, not tessellated.
subacute to narrowly obtuse, not cucullate, filament channels shallow, glabrous. Stamens 1/2 to 2/3 of perianth limb in length; filaments 4-12 mm, white, sometimes bright pink to purplish in upper part, with swollen orange yellow base, glabrous; anthers 2-4.5 (-5) x 1-2 mm, bright yellow to dark grey, very thin or without membranous margin. Styles as long as or longer than stamens, straight or slightly curved at apex, white, stigmas punctiform. Capsule at ground level, 0.8-1 (1.5) x 0.4-0.7 cm, elliptic to oblong-elliptic, rostrate, glabrous; seeds 1.5-2 (-3) mm diam., almost globose, light to dark brown. Flowering time, January-March; Leaves and fruiting time: April-May.

Similar species: C. minutum was described as a new species by K. Persson in 1999. This species is regarded as C. psaridis Heldr. ex Hal. in Flora of Turkey (Brickell, 1984) but except for the soboliferous habit, the 2 species are not really similar. C. psaridis is a Greek endemic (Peloponnesus) with usually 2 leaves (with 3 (-4) leaves in C. minutum) and bright purplish pink flowers (white to bright pink flowers in C. minutum) (Persson, 1999a).

C. minutum is related to C. munzurense K.M.Perss., which is known from only around Tunceli. Comparison of morphological characteristics between these species is shown in Table 3.

Habitat: Openings in Quercus scrub, on limestone, stony slopes, and moist terra rossa.

Altitudinal range: 800-1400 m.

Turkey distribution: South Anatolia. Endemic (EN).

Phytogeographical status: East Mediterranean element.

Flora of Turkey records: C4 Antalya: Taurus mtns. in region of Gündoğmuş N. of Alanya, 1370 m, Allison & Ball 77 / 7. 2 km from Gündoğmuş to Güzelyaş, 1100 m, Kammerl. & al. 90-08. İçel: Taurus, Anamur, Sıtmalı Yaylası, 1100 m, Markgraf 11121. C6 Adana/Hatay: An feuchten Orten westlich von Issus in der Cilicia pedia, Siehe 97-sub C. isisco.

Specimens examined: C3 Antalya: İbradı, Ürünlü village, Değirmen stream, opening of Quercus scrub, 800-900 m, 1.iii.2003, 37° 02’ 477” N, 31° 37’ 231” E, O.D. Düşen (2591), S. Düşen, K. Çetinkaya (AKDU) - Gündoğmuş, moist terra rossa, 800-900 m, 8.iii.2002, 36° 48’ 062” N, 31° 59’ 747” E, O.D. Düşen (2481), S. Düşen, A. Dinç (AKDU) - Gündoğmuş, moist terra rossa, 750-800 m, 5.v.2002, 36° 48’ 062” N, 31° 59’ 747” E, O.D. Düşen (2481a), S. Düşen (AKDU) - Between Gündoğmuş and Güzelyaş, openings of Quercus cocciifera, 900-1000 m, 8.iii.2002, 36° 48’ 253” N, 32° 00’ 304” E, O.D. Düşen (2480), S. Düşen, A. Dinç (AKDU) - Between Gündoğmuş and Güzelyaş, moist terra rosa, 900-1000 m, 1.iii.2003, 36° 48’ 214” N, 32° 00’ 289” E, O.D. Düşen (2593), S. Düşen, K. Çetinkaya (AKDU).


Lectotypus : [Syria] [specimen meum Latakiae Syriae lectum, quod amicitiae Cl. Labillardière debeo] (Steven in Nouv. Mem. Soc. Nat. Mosc. 7: 267, 1829).

Description: Corm 1-3 x 0.8-1.5 cm, ovoid to subglobose; outer tunics subcoriaceous or papery, dark brown to brown, inner tunics papery, reddish-brown; neck persistent, 1-12 (-15) cm. Cataphyll 1.5-15 (-20) x 0.5-1.5 (-2) cm, white or yellowish-white. Leaves synanthous, 3-7 (-12), suberect to spreading, extending 1-15 cm from cataphyll at anthesis, 6-20 x 0.1-0.5 cm, linear, obtuse to acute, entire, glabrous or ciliate on

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th>C. minutum</th>
<th>C. munzurense</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corm</td>
<td>soboliferous</td>
<td>narrowly ovoid to ellipsoid-ovoid</td>
</tr>
<tr>
<td>Leaves</td>
<td>more spreading, channelled with a distinct midvein</td>
<td>flat with narrowly furrowed along ± transparent midvein</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>channelled 5-7 (-9) obscure veins</td>
<td>flat 7-11 very distinct veins</td>
</tr>
<tr>
<td>Filaments</td>
<td>white, sometimes bright pink to purplish in upper part</td>
<td>yellowish white to pale yellow</td>
</tr>
<tr>
<td>Styles</td>
<td>white</td>
<td>pale yellow or yellowish green</td>
</tr>
</tbody>
</table>
Margins. Flowers 1-6 (-10), funnel-shaped; perianth tube exceeding the cataphyll by 1-10 (-12) cm, cream or yellowish-white sometimes pink to purplish-pink in upper part; segments 1.5-3 x 0.2-0.6 (-0.9) cm, narrowly lanceolate to oblanceolate or oblong-elliptic, each segment 7-9 veins, pink or purplish-pink, not tessellated, acute to obtuse, not cucullate, filament channels glabrous. Stamens longer or shorter than 1/2 of perianth limb in length; filaments 5-12 (-14) mm, white or cream, with swollen orange yellow base, glabrous; anthers 2-4 (-5) x 0.5-1 (-1.2) mm, yellow to greenish-grey or sometimes purplish, very thin membranous margin. Styles as long as or longer than stamens, straight, white, or cream, stigmas punctiform. Capsule 0.7-1.5 x 0.4-1 cm, oblong-ovoid, dark brown to black dotted when dry, acuminate, glabrous; seeds 1-3 mm diam., globose to ovoid, light to dark brown. Flowering time, October-December; Leaves and fruiting time: February-April.

**Similar species:** The anther colour of *C. stevenii* was given only as yellow in Flora of Turkey (Brickell, 1984). Our field observations and studies revealed that its anther colour is not only yellow but also greenish-grey or sometimes purplish. *C. stevenii* is similar to *C. pusillum* Sieber, which is distributed in Greece, Crete, Cyprus and Cyclades. Although the anther colour of *C. pusillum* was given as purplish-black, brownish-black or grey-black in Flora of Turkey (Brickell, 1984), in Flora Europaea it was stated that the same species’ anther-colour is occasionally yellow and anther-colour varies considerably in different populations (Brickell, 1980). Therefore, for these reasons, anther colours are not a reliable character for distinguishing *C. stevenii* and *C. pusillum*. Comparison of morphological characteristics between these species is shown in Table 4.

**Figure 4. Distribution of Colchicum stevenii (■) in Turkey.**

**Table 4. Comparison of morphological characteristics between *C. stevenii* and *C. pusillum*.**

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th><em>C. stevenii</em></th>
<th><em>C. pusillum</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Corm tunics</td>
<td>subcoriaceous or papery</td>
<td>only papery</td>
</tr>
<tr>
<td>Neck</td>
<td>up to 12 (-15) cm</td>
<td>up to 4 (-6) cm</td>
</tr>
<tr>
<td>Leaves</td>
<td>extending up to 15 cm from cataphyll at anthesis up to 20 cm long at maturity</td>
<td>extending up to 4 cm from cataphyll at anthesis up to 11 cm long at maturity</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>7-9 veins pink or purplish-pink</td>
<td>5 veins pale rosy-lilac to white</td>
</tr>
<tr>
<td>Filaments</td>
<td>up to 12 (-14) mm long</td>
<td>up to 8 mm long</td>
</tr>
<tr>
<td>Capsule</td>
<td>oblong-ovoid</td>
<td>ovoid</td>
</tr>
<tr>
<td>Altitudinal range</td>
<td>up to 1500 m</td>
<td>up to 100 m</td>
</tr>
</tbody>
</table>
Habitat: Rocky and stony slopes and clearings of maquis.

Altitudinal range: 0-1500 m.

Turkey distribution: West and South Anatolia.

World distribution: Cyprus, West Syria, Greece.

Phytogeographical status: East Mediterranean element.

Flora of Turkey records: B1 İzmir: nr Kuşadası, xi. 1962, cult. Hodgkin (fl.). C2 Antalya: Kâş to Kalkan, s.l., T. Baytop (ISTE 36263, fl.). C3 Antalya: Bunda Burun, S.W. of Finike, 25 m, Watson et al. 3897 (fl.). C5 İçel: Arslanköy, 25 km from Mersin, Baron 2212 (fl.).

Specimens examined: C2 Antalya: Kalkan to Kâş, 2 km from Kalkan, 100 m, 21.iii.1977, Baytop (ISTE 36548) - Kale to Kâş, 11 km to Kâş, 500 m, 7.xi.1976, Baytop (ISTE 36261) - Kâş, maquis, limestone slopes, 36° 11' 919" N 29° 37' 139" E, 33 m, 30.xi.2001, S. İşık (25), A.A. Dönmez (HUB) - Kâş to Kalkan, 2 km to Kalkan, clearings in maquis, 120 m, 6.xi.2002, 36° 15' 003" N, 29° 25' 441" E, O.D. Düşen (2583), S. Düşen, O. Erol (AKDU) - Kalkan to Elmalı, 7 km from Kalkan, clearings in maquis, 600-630 m, 6.xi.2002, 36° 14' 523" N, 29° 27' 692" E, O.D. Düşen (2581), S. Düşen, O. Erol (AKDU). C3 Antalya: Kemer between Faselis and Beycik Village, 2.xi.1978, H. Peflmen 4123, B. Yıldız, O. Güneş (HUB) - Kemer between Kesmeboğaz and Sumakşehri, 50-600 m, 28.ii.1980, H. Peflmen 4768 (HUB) - Kemer to Beycik Village, Sarıçınar, 1500 m, 2.xi.1978, H. Peflmen (ANK) - Finike, Bunda Cape, rocky slopes, 50-100 m, 8.xi.2002, 36° 17' 343° K, 30° 08' 699" D, O.D. Düşen (2466), S. Düşen, K. Çetinkaya (AKDU) - Finike, Bunda Cape, rocky slopes, 50-60 m, 13.iv.2003, O.D. Düşen (2466a), S. Düşen (AKDU). C6 Antakya: 10 km south-west of Antakya, around Büyük Karacay, 4.xi.1976, M. Miski (ISTE 36284).

5. Colchicum serpentinum Woron. ex Miscz. in Fl. Cau. Crit. 2: 114 (1912). (Figure 5).


Description: Corm 1-3 (-4) x 0.8-2 cm, ovoid; outer tunics papery or subcoriaceous, reddish-brown to dark brown, inner tunics membranous or papery, yellowish-brown to bright brown; neck absent. Cataphyll 3.5-15 x 0.1-0.8 (-1) cm, white or yellowish-white. Leaves synanthous, 3-4, suberect to arcuate, extending 1.5-10 cm from cataphyll at anthesis, 8-18 (-20) x 0.1-0.8 (-1) cm at maturity, narrowly linear to linear-lanceolate, subacute to obtuse, entire, glabrous, scabrous or sparsely to densely hispid on margins and dorsal surface. Flowers 1-6 (-8), stellate or narrowly funnel-shaped; perianth tube exceeding the cataphyll by 1-6 cm, white or cream; segments 1-2.5 x 0.2-0.6 cm, elliptic to ob lanceolate, each segment 8-12 veins, white, pink, or purplish-pink, not tessellated, acute to obtuse, not cucullate, filament channels glabrous. Stamens as long as 1/2 of perianth limb in length; filaments 4-12 mm, white or cream, with
swollen yellow or orange yellow base, glabrous; anthers 2.3-5 \times 1.1.5 \text{ mm}, black, greenish-black or blackish-brown, without membranous margin. Styles as long as or longer than stamens, straight, white, stigmas punctiform. Capsule 0.8-1.5 (-2) \times 0.5-1 (-1.2) \text{ cm}, ovoid to elliptic or subglobose, apiculate, glabrous; seeds 1-3.5 (-4) \text{ mm} diam., almost globose to ovoid, sometimes flattened laterally, reddish-brown. Flowering time, February-May; Leaves and fruiting time: April-June (-July).

**Similar species:** *C. serpentinum* was included in *C. falcifolium* Stapf in *Flora of Turkey* vol. 8 (Brickell, 1984), but it was excluded from the synonyms listed under *C. falcifolium* in *Flora of Turkey* vol. 11 (Persson, 2000).

This species is similar to *C. minutum* K.M.Perss., *C. pusillum* Sieber, and *C. stevenii* Kunth. Comparison of morphological characteristics between these species is shown in Table 5.

### Table 5. Comparison of morphological characteristics between *C. serpentinum*, *C. minutum*, *C. pusillum*, and *C. stevenii*.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th><em>C. serpentinum</em></th>
<th><em>C. minutum</em></th>
<th><em>C. pusillum</em></th>
<th><em>C. stevenii</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Corm</td>
<td>0.8-2 cm width ovoid</td>
<td>0.2-0.7 (-1) cm width suberete</td>
<td>0.9-1.7 cm width ovoid to subglobose</td>
<td>0.8-1.5 cm width ovoid to subglobose</td>
</tr>
<tr>
<td>Tunics</td>
<td>papery or subcoriaceous reddish-brown to dark brown</td>
<td>membranous yellowish-brown to bright brown</td>
<td>only papery dull dark brown</td>
<td>subcoriaceous or papery dark brown to brown</td>
</tr>
<tr>
<td>Neck</td>
<td>absent</td>
<td>absent</td>
<td>present</td>
<td>present</td>
</tr>
<tr>
<td>Leaves</td>
<td>3-4 narrowly linear to linear-lanceolate glabrous, scabrous or sparsely to densely hispid on margins and dorsal surface</td>
<td>3 (rarely 4) linear to lanceolate-linear only glabrous</td>
<td>3-6 (-8) narrowly linear only linear or sometimes ciliate on margins</td>
<td>3-7 (-12) only linear or glabrous or ciliate on margins</td>
</tr>
<tr>
<td>Flowers</td>
<td>1-6 (-8) stellate or narrowly funnel-shaped</td>
<td>1-2 (-4) funnel-shaped</td>
<td>1-4 (-6) funnel-shaped opening stellate</td>
<td>1-6 (-10) funnel-shaped</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>elliptic to oblanceolate white, pink or purplish-pink</td>
<td>linear to oblong white to bright pink or sometimes purplish-pink at the base</td>
<td>narrowly oblanceolate to narrowly oblanceolate pale rosy-lilac to white</td>
<td>narrowly lanceolate to oblanceolate or oblanceolate-pink only pink or purplish-pink</td>
</tr>
<tr>
<td>Filaments</td>
<td>4-12 mm white or cream</td>
<td>4-12 mm white, sometimes bright pink to purplish in upper part</td>
<td>5-8 mm only white</td>
<td>5-12 (-14) mm white or cream</td>
</tr>
<tr>
<td>Anthers</td>
<td>1-1.5 mm width black, greenish-black or blackish-brown without membranous margin</td>
<td>1-2 mm width bright yellow to dark grey very thin or without membranous margin</td>
<td>0.5 mm width purplish-black</td>
<td>0.5-1 (-1.2) mm width yellow to greenish-grey or sometimes purplish very thin membranous margin</td>
</tr>
<tr>
<td>Capsule</td>
<td>ovoid to elliptic or subglobose</td>
<td>elliptic to oblanceolate-elliptic</td>
<td>only ovoid</td>
<td>oblong-ovoid</td>
</tr>
<tr>
<td>Seeds</td>
<td>almost globose to ovoid, sometimes flattened laterally reddish-brown</td>
<td>only globose light to dark brown</td>
<td>---</td>
<td>oblanceolate-ovoid</td>
</tr>
<tr>
<td>Flowering time</td>
<td>February-May</td>
<td>January-March</td>
<td>October-November</td>
<td>October-December</td>
</tr>
<tr>
<td>Altitudinal range</td>
<td>250-1800 m</td>
<td>800-1400 m</td>
<td>sea level-100 m</td>
<td>0-1500 m</td>
</tr>
</tbody>
</table>
Habitat: Moist meadows, steppe, limestone.

Altitudinal range: 250-1800 m.

Turkey distribution: Inner, South, North-East, and South-East Anatolia.

World distribution: South-West Georgia.

Phytogeographical status: Irano-Turanian element.

Flora of Turkey records:
- A5 Amasya: mt. Logman, 800-900 m, Bornm. 1889; A6 Tokat: Tokat to Sivas, 1400 m, T. Baytop (ISTE 38892).
- A8 Trabzon: ca. 107 km S.E. of Trabzon towards Erzurum, 930 m, Grey-Wilson & Hewer 19.
- B6 Maraş: 15 km N. of Göksun, 1600 m, Mathew & Tomlinson 4524.
- B7 Erzincan: Kemaliye, Sorak valley and hills, 1100-1600 m, 4.iv.1980, F. Yıldırımlı (2530).
- B8 Diyarbakır: 15 km from Silvan, Sauer 133 / 57.
- C4 Antalya: Ala Da., 1830 m, Allison et al. 28.
- C5 İçel: 3 km after Arslanköy, Yedigöz, 1500 m, Brickell & Mathew 8477.
- C6 Hatay: 15 km N. of İskenderun, 250 m, Watson et al. 2453.
- C8 Mardin: 3 km from Savur to Pınardere village, 900 m, Güner 1597.

Specimens examined:
- A9 Kars: Posof, Sarıçiçek village, Gönülcan forest, 1900-2200 m, 8.v.1986, N. Demirkufl (3484) (HUB 35206).
- B7 Erzincan: Kemaliye, Sorak valley and hills, 1100-1600 m, 4.iv.1980, F. Yıldırımlı (2530).
- Karaman: Özyurt mountain, Yollarbaşı town, 1200 m, steppe openings, 18.iii.1995, A. Dönmez (4403) (HUB 35205).

6. Colchicum szovitsii Fisch. & C.A. Mey. in Ind. Sem. Horti Petropol. 1: 24 (1835). (Figure 6).


Description: Corm 1-3.5 (-4) x 0.8-2.5 (-3) cm, ovoid to subglobose; outer tunics papery or subcoriaceous, dark brown to blackish-brown, inner tunics membranous or subpapery, reddish-brown; neck absent. Cataphyll 3-16 (-18) x 0.3-1.5 cm, white or yellowish-white, sometimes purplish in upper part. Leaves synanthous, 2-3 (-4), suberect to spreading, extending 2-8 (-12) cm from cataphyll at anthesis, (10-) 15-25 x (1-) 1.5-3.5 cm at maturity, ligulate to linear-lanceolate, acute, cuculate, entire or slightly undulate, glabrous. Flowers 1-5 (-7), campanulate; perianth tube exceeding the cataphyll by 1-10 cm, white or yellowish-white, purplish-pink in upper part; segments 1.5-2.5 (-3.5) x 0.4-1.2 cm, elliptic to oblanceolate, each segment 7-15 veins, white, light or dark purplish-pink, not tessellated, acute to obtuse, sometimes with basal auricles, filament channels distinct, glabrous. Stamens 1/2 to 1/3 of perianth limb in length; filaments 5-13 mm, white or cream, with swollen yellow base, glabrous; anthers 1.5-4 x 0.8-1.2 mm, purplish-black or greenish-black, sometimes slightly or without membranous margin. Styles straight, white or yellowish-white, stigmas punctiform. Capsule 2.3-5 (-4) x 1.2 (-2.5) cm, ovoid to elliptic or globose, light to dark brown dotted when dry, apiculate, glabrous; seeds 1.5-4 mm diam., almost globose, reddish-brown. Flowering time, February-June (-August); Leaves and fruiting time: April-July (-September).

Similar species: C. szovitsii shows different morphological features (such as corm tunics types, size and number of leaves and flowers) in different ecological conditions. Many populations have evolved in these different conditions and all these populations are included in C. szovitsii.

C. szovitsii is related to C. triphyllum Kunze. Comparison of morphological characteristics between these species is shown in Table 6.

Table 6. Comparison of morphological characteristics between C. szovitsii and C. triphyllum.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th>C. szovitsii</th>
<th>C. triphyllum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer tunics</td>
<td>papery or subcoriaceous</td>
<td>membranous</td>
</tr>
<tr>
<td>Inner tunics</td>
<td>membranous or subpapery reddish-brown</td>
<td>only membranous yellowish-brown to light brown</td>
</tr>
<tr>
<td>Leaves</td>
<td>(10-) 15-25 x (1-) 1.5-3.5 cm at maturity</td>
<td>10-15 (-18) x 0.5-1 (-1.5) cm at maturity</td>
</tr>
<tr>
<td></td>
<td>ligulate to linear-lanceolate</td>
<td>only linear-lanceolate</td>
</tr>
<tr>
<td>Perianth tube</td>
<td>purplish-pink in upper part</td>
<td>entirely white or cream</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>white, light or dark purplish-pink</td>
<td>light pink or purplish-pink</td>
</tr>
</tbody>
</table>
Habitat: Moist alpine meadows, open slopes near melting snow, clearings of Pinus forest.

Altitudinal range: 200-3250 m.

Turkey distribution: North, South, East, and Inner Anatolia.

World distribution: Caucasus and Iran.

Phytogeographical status: Irano-Turanian element.

Flora of Turkey records:
- A1 Edirne: Tekirdağ to İneçik, 200 m, A. Baytop (ISTE 14883).

Specimens examined:

A Morphological Investigation of Colchicum L. (Liliaceae) Species in the Mediterranean Region in Turkey

7. Colchicum triphyllum Kunze in Flora 29 (2): 755 (1846). (Figure 7).

Typus: [Spain, Andalucia] Sierra de Yunquera in humo lutoso ad nivem deliquescentem ad hoya del tejo, et puerto de las tres cruces, 1830-2135 m., [H.M. Willkomm in Hb. Kunze] (holo. LZ, destroyed; iso. COI).
= \textit{C. bulbocodioides} Bieb., Fl. Taur.-Cauc. 1: 293 (1808) non Brot. (1844).


= \textit{C. catacuzenium} Heldr. ex Stef., Monogr. \textit{Colchicum} 38 (1926).


\textbf{Description:} Corm 0.8-2.5 x 0.5-1.5 cm, ovoid to subglobose; outer tunics membranous, dark brown, inner tunics membranous, yellowish-brown to light brown; neck absent. Cataphyll 4-18 (-20) x 0.3-1 cm, white or yellowish-white, sometimes purplish-pink in upper part. Leaves synanthous, 3 (-4), suberect to arcuate, extending 2-12 cm from cataphyll at anthesis, 10-15 (-18) x 0.5-1 (-1.5) cm at maturity, linear-lanceolate, acute or subacute, slightly undulate or entire, margin scabrid or glabrous. Flowers 1-6, funnel-shaped to campanulate; perianth tube exceeding the cataphyll by 1-8 cm, white or cream; segments 1-2.5 (-3) x 0.5-1 (-1.2) cm, narrowly elliptic to oblong-elliptic or oblanceolate, each segment 10-21 veins, light pink or purplish-pink, not tessellated, acute to obtuse, sometimes with filiform lamellae or auricles at base, filament channels distinct, glabrous. Stamens shorter or longer than 1/2 of perianth limb in length; filaments 5-10 mm, white or yellowish-white, with swollen orange yellow base, glabrous; anthers 2-4 x 1-2 mm, purplish-black or greenish-black, without membranous margin. Styles straight, white or cream, stigmas punctiform. Capsule 1.5-3 x 0.8-1.5 cm, ovoid to oblong-ovoid to elliptic, apiculate, glabrous; seeds 1.5-3 mm diam., almost globose, dark brown to reddish-brown. Flowering time, February-May; Leaves and fruiting time: April-June.

\textbf{Similar species:} \textit{C. triphyllum} is similar to \textit{C. szovitsii}. Comparison of morphological characteristics between these species is shown in Table 7.

\textbf{Habitat:} Rocky and stony slopes, open slopes near melting snow zone.

\textbf{Altitudinal range:} 700-2100 m.

\textbf{Turkey distribution}: South, West, East, and Inner Anatolia.

\textbf{World distribution}: North-west Africa, Central and South Spain, Greece to South Russia.

\textbf{Phytogeographical status}: Mediterranean element.

Table 7. Comparison of morphological characteristics between C. triphyllum and C. szovitsii.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th>C. triphyllum</th>
<th>C. szovitsii</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer tunics</td>
<td>membranous</td>
<td>papery or subcoriaceous</td>
</tr>
<tr>
<td>Inner tunics</td>
<td>only membranous yellowish-brown to light brown</td>
<td>membranous or subpapery reddish-brown</td>
</tr>
<tr>
<td>Leaves</td>
<td>10-15 (-18) x 0.5-1 (-1.5) cm at maturity</td>
<td>(10-) 15-25 x (1-) 1.5-3.5 cm at maturity</td>
</tr>
<tr>
<td>Perianth tube</td>
<td>entirely white or cream</td>
<td>purplish-pink in upper part</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>light pink or purplish-pink</td>
<td>white, light or dark purplish-pink</td>
</tr>
</tbody>
</table>
A Morphological Investigation of Colchicum L. (Liliaceae) Species in the Mediterranean Region in Turkey


8. Colchicum burtii Meikle in Bot. Mag. 181: n. s. t. 735 (1977). (Figure 8).


Description: Corm 1-4 (-5) x 0.8-2 cm, narrowly ovoid to subglobose; outer tunics strongly coriaceous, dark brown to blackish-brown, inner tunics light brown.
to chestnut-brown, apex laciniate with rigid fibres extending for 1-4 (-5) cm. Cataphyll 4-10 x 0.2-0.7 (-1) cm, white or yellowish-white. Leaves synanthous, (2-) 3-4, suberect to spreading, extending 1-6 cm from cataphyll at anthesis, 8-15 x 0.5-1.2 cm at maturity, narrowly linear to linear-lanceolate, obtuse, slightly undulate or entire, margin pilose. Flowers 1-3 (-5), funnel-shaped; perianth tube exceeding the cataphyll by 1-5 cm, white or yellowish-white, sometimes purplish-pink in upper part; segments 1.5-2.5 (-3) x 0.2-0.6 cm, narrowly elliptic to ob lanceolate, each segment 8-15 veins, white to purplish-pink, not tessellated, acute to obtuse, without auricles at base, filament channels distinct, glabrous. Stamens 1/2 to 2/3 of perianth limb in length; filaments 6-12 mm, white or cream, with swollen yellow base, pilose at least near base; anthers 1-3 x 0.8-1.2 mm, purplish-black or black, without membranous margin. Styles straight, white, stigmas punctiform. Capsule 0.8-1.5 x 0.3-0.8 cm, ovoid to elliptic, scabrid-pilose at apex; seeds 1-3 mm diam., almost globose, dark brown. Flowering time, January-April; Leaves and fruiting time: March-June.

Similar species: C. burtii was described as a new endemic species by Meikle in 1977. It is related to C. triphyllum Kunze and so differences between the 2 species are shown in Table 8.

Habitat: Rocky and stony slopes, moist meadows, clearings in maquis and forest.

Altitudinal range: 600-1650 m.

Turkey distribution: West and Central Anatolia. Endemic (LC).

Table 8. Comparison of morphological characteristics between C. burtii and C. triphyllum.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th>C. burtii</th>
<th>C. triphyllum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer tunics</td>
<td>strongly coriaceous dark brown to blackish-brown</td>
<td>membranous only dark brown</td>
</tr>
<tr>
<td></td>
<td>apex laciniate with rigid fibres extending for 1-4 (-5) cm</td>
<td>not apex laciniate with rigid fibres</td>
</tr>
<tr>
<td>Leaves</td>
<td>obtuse margin pilose</td>
<td>acute or subacute margin scabrid or glabrous</td>
</tr>
<tr>
<td>Perianth tube</td>
<td>sometimes purplish-pink in upper part</td>
<td>completely white or cream</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>without auricles at base</td>
<td>sometimes with filiform lamellae or auricles at base</td>
</tr>
<tr>
<td>Filaments</td>
<td>pilose at least near base</td>
<td>glabrous</td>
</tr>
<tr>
<td>Capsule</td>
<td>0.8-1.5 x 0.3-0.8 cm scabrid-pilose at apex</td>
<td>1.5-3 x 0.8-1.5 cm glabrous</td>
</tr>
</tbody>
</table>
Phytogeographical status: East Mediterranean element.


9. Colchicum kotschyi Boiss., Diagn. ser. 1 (13): 38 (1853). (Figure 9).


= C. persicum Baker in J. Linn. Soc. (Bot.) 17: 430 (1879).

= C. candidum Schott & Kotschy ex Boiss. var. hirtiflorum Boiss., Fl. Or. 5: 160 (1882).


Description: Corm (2.5-) 3-7 x 2-6 cm, narrowly ovoid to elliptic-ovoid; outer tunics membranous or subcoriaceous, dark brown, inner tunics membranous, reddish-brown to light brown; neck present, 3-14 (-15)
x 0.6-2.5 (-3) cm, light brown to dark brown. Cataphyll longer than neck, 4-20 x 0.5-2.5 (-2.8) cm, white or yellowish-white. Leaves hysteranthous, 3-4 (-6), suberect to spreading, 10-20 (-25) x 2-6 (-7) cm at maturity, narrowly obleng-lanceolate to obleng-elliptic, rounded to subacute, margins slightly undulate or entire, glabrous. Flowers 2-12, funnel-shaped; perianth tube exceeding the cataphyll by 2-10 (-15) cm, white or yellowish-white, sometimes light purplish in upper part; segments (2.3-) 3-5.5 x 0.4-1.5 (-2) cm, linear to oblanceolate or obleng-elliptic, each segment 10-17 (-23) veins, white, light pink or purplish-pink, not tessellated, subacute to obtuse, without auricles at base, puberulous or pubescent along bases of ridges of filament channels. Stamens 1/2 to 1/3 of perianth limb in length; filaments 6-20 mm, white, with swollen light yellow or orange yellow base, glabrous; anthers (5-) 6-12 x 1-1.5 cm, yellow, with membranous margin. Styles curved at apex, white, stigmas decurrent for 1-3 (-4) mm. Capsule 2-4.5 (-5) x 1-3 cm, elliptic to obleng-ovoid, light to dark brown dotted when dry, rostrate, glabrous; seeds 2-4 mm diam., almost globose, reddish-brown to dark brown. Flowering time, July-December; Leaves and fruiting time: April-June.

Similar species: The specimens of C. kotschyi were first collected by Kotschy from Iran in 1847 and then these specimens were described as a new species by Boissier in 1853. As indicated in Flora of Turkey, this species was confused in herbaria and the literature with C. balansae Planchon and C. decaisnei Boiss. C. kotschyi is similar to C. speciosum Steven and so differences between the 2 species are shown in Table 9.

Habitat: Moist meadows, alpinic steppe, clearings in Pinus forest, rocky and stony slopes.

Altitudinal range: 1000-3000 m.

Turkey distribution: North, South, West, East, and Inner Anatolia.

World distribution: Iraq, Iran.

Phytogeographical status: Irano-Turanian element.

Flora of Turkey records:

Specimens examined: B9 Bitlis: Tatvan-Van road 10 km, rocky slopes, 1900-1940 m, 8.viii.1989, Quercus sp. openings, Aytac (2988) (GAZI) - Gevafl to Tatvan, Pelli village (Alacabük Village), Pelli Mountain, 2400 m, 2.vii.1980, Baytop (ISTE 45322) - Hizan to Bitlis 5 km, Darulus village, limestone slopes, 1722 m, 1.x.2001, 38° 13’ 561'' N, 42° 21’ 868” E, A.A. Dönmez (10262) (HUB) - Tatvan, Karz mountain, Sapur village, mixture forest and alpine steppe, 1800-2600 m, 20.viii.1972, H. Peşmen (3242) (HUB) - Tatvan-Hizan, Kavakdibi village, 1850 m, 18.ix.1978, T. Baytop et al. (ISTF 39149) - Kotum, Karz mountain, 1900 m, 23.viii.1954, Davis, Polunin (ANK) - Alacabük mountain, Bağ Village, Kuzey Nizam slopes, 2100 m, 13.iv.2002, F. Özgökçe (F 9966) (VANF).

Table 9. Comparison of morphological characteristics between C. kotschyi and C. speciosum.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th>C. kotschyi</th>
<th>C. speciosum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves</td>
<td>narrowly oblong-lanceolate to obleng-elliptic</td>
<td>narrowly elliptic to obleng-lanceolate</td>
</tr>
<tr>
<td>Flowers</td>
<td>2-12 funnel-shaped</td>
<td>1-3 narrowly campanulate to campanulate</td>
</tr>
<tr>
<td>Perianth tube</td>
<td>white or yellowish-white</td>
<td>green or white flushed purple</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>(2.3-) 3-5.5 x 0.4-1.5 (-2) cm</td>
<td>(4.5-) 6-7 (-8) x (1-) 1.8-2.7 cm</td>
</tr>
</tbody>
</table>


395


10. Colchicum heldreichii K.M.Perss. in Edinb. J. Bot. 56: 98, f. 2E-F, 4E-F (1999). (Figure 10).

Typus: Turkey C4 Konya: 3 km ENE. of Derbent, grassy depressions in hills near road, deep reddish-brown soil, 1600 m, 29.viii.1994, K. Persson 555 (holo. GB).

**Description:** Corm 1.5-4 (-4.5) x 1.3-5.5 cm, elliptic to ovoid; outer tunics membranous or subpapery, reddish-brown to brown, inner tunics membranous, light brown to yellowish-brown; neck present, 2(-3) 3-10 (-12) x 0.4-1 (-1.3) cm. Cataphyll 3.5-13 (-15) x 0.3-0.8 (-1) cm, white, sometimes purplish-red at apex. Leaves hysteranthous, 3-4, suberect to arcuate-procumbent, 5-15 x 0.8-2.5 (-3) cm at maturity, linear to oblong, obtuse to retuse, margins slightly undulate, glabrous to scabrid. Flowers 1-6 (-7), narrowly funnel-shaped; perianth tube exceeding the cataphyll by 2-6 (-8) cm, white or yellowish-white, sometimes light purplish in upper part; segments 1.5-5 x 0.3-0.8 (-1) cm, linear to linear-lanceolate or oblong, each segment 9-15 veins, white to lilac-pink, not tessellated, subacute to retuse, without auricles at base, filament channels shallow, glabrous or sometimes densely pubescent at base. Stamens 1/2 to 1/3 of perianth limb in length; filaments 5-13 mm, white or cream, with swollen golden yellow base, glabrous; anthers 4-7 (-8) x 0.8-1.3 mm, yellow, with membranous margin. Styles longer than stamens, curved at apex, white or cream, stigmas decurrent for 1-4.5 mm. Capsule ground level, 1-2 (2.5) x 0.5-1.3 (-1.5) cm, oblong to elliptic-oblong, light to dark brown dotted when dry, apiculate, glabrous; seeds 1.5-2.5 mm diam., elliptic to globose, light to dark brown. Flowering time, August-October; Leaves and fruiting time: February-April.

**Similar species:** C. heldreichii was described as a new species by K.M.Persson in 1999. It is related to C. kotschyi Boiss. and so differences between the 2 species are shown in Table 10.
Habitat: Moist meadows, open terra rossa, rocky and stony slopes.

Altitudinal range: 1400-2338 m.

Turkey distribution: Central Anatolia. Endemic (EN).

Phytogeographical status: Irano-Turanian element.

Flora of Turkey records: C3/4 Konya: entre Beychehr et Koniah près du chemin, Heldr. 1257. C4 Antalya: Geyik Da¤, 2338 m, Davis 14250.

Specimens examined: C4 Konya: Hadim, Hadim-Beyreli road, 20 km, high mountain steppe, 1980 m, 9.ix.1998, 36° 54′ 86″ N, 32° 23′ 99″ E, H. Duman (6842), Z. Aytac (GAZI) - Derbent, Yeni village, Harman, 1410-1420 m, 25.viii.2002, O.D. Ḍuʒen (2543), S. Ḍuʒen, K. Çetinkaya (AKDU) - Derbent, 2-3 km north of Derbent, moist meadows, terra rosa, 1539-1540 m, 22.ix.2002, 38° 01′ 543″ N, 32° 01′ 844″ E, O.D. Ḍuʒen (2556), S. Ḍuʒen, K. Çetinkaya (AKDU) - Derbent, 2-3 km north of Derbent, moist meadows, terra rosa, 1500-1600 m, 12.iv.2003, O.D. Ḍuʒen (2556a), S. Ḍuʒen, K. Çetinkaya (AKDU) - Derbent, 8-10 km north of the Derbent, water reservoir, slopes, 1650 m, 22.ix.2002, 38° 01′ 856″ N, 32° 03′ 509″ E, O.D. Ḍuʒen (2557), S. Ḍuʒen, K. Çetinkaya (AKDU).

11. *Colchicum decaisnei* Boiss., Fl. Or. 5: 157 (1882). (Figure 11).


= *C. laetum* auct., non Steven (1829).


Description: Corm 1-4 (-5) x 0.8-3.5 (-4) cm, broadly ovoid to subglobose; tunics membranous or subcoriaceous, light brown to reddish-brown or dark brown; neck present, (2-) 3-9 (-10) x 0.5-1.5 (-2) cm. Cataphyll 3-15 x 0.3-1 (-1.5) cm, cream or yellowish-white, sometimes purplish-red at apex. Leaves hysteranthous, 3-5 (-6), suberect to arcuate-porcumbent, 8-22 (-30) x 1-5 (-7) cm at maturity, linear-lanceolate to lanceolate or narrowly ovate, subobtuse to obtuse, margins slightly undulate, glabrous to densely ciliate. Flowers 2-10 (-15), narrowly or

---

**Table 10.** Comparison of morphological characteristics between *C. heldreichii* and *C. kotschyi.*

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th><em>C. heldreichii</em></th>
<th><em>C. kotschyi</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Corm</td>
<td>1.5-4 (-4.5) x 1-3.5 cm</td>
<td>(2.5-) 3-7 x 2-6 cm</td>
</tr>
<tr>
<td>Outer tunics</td>
<td>reddish-brown to brown</td>
<td>dark brown</td>
</tr>
<tr>
<td>Inner tunics</td>
<td>sometimes yellowish-brown</td>
<td>reddish-brown</td>
</tr>
<tr>
<td>Cataphyll</td>
<td>sometimes purplish-red at apex</td>
<td>completely white or yellowish-white</td>
</tr>
<tr>
<td>Leaves</td>
<td>suberect to arcuate-porcumbent 0.8-2.5 (-3) cm width linear to oblong obtuse to retuse margins glabrous to scabrid</td>
<td>suberect to spreading 2-6 (-7) cm width narrowly oblong-lanceolate to oblong-elliptic rounded to subacute only glabrous</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>linear to linear-lanceolate or oblong</td>
<td>oblanceolate or oblong-elliptic</td>
</tr>
<tr>
<td>Filament channels</td>
<td>glabrous or sometimes densely pubescent at base</td>
<td>puberulous or pubescent along bases of ridges of filament channels</td>
</tr>
<tr>
<td>Anthers</td>
<td>4-7 (-8) cm long</td>
<td>(5-) 6-12 cm long</td>
</tr>
<tr>
<td>Capsule</td>
<td>1-2 (2.5) x 0.5-1.3 (-1.5) cm oblong to elliptic-oblong</td>
<td>2-4.5 (-5) x 1-3 cm elliptic to oblong-ovoid</td>
</tr>
<tr>
<td>Seeds</td>
<td>1.5-2.5 mm diam. elliptic to globose</td>
<td>2-4 mm diam. only globose</td>
</tr>
</tbody>
</table>
broadly funnel-shaped; perianth tube exceeding the cataphyll by 1.5-8 cm, white or yellowish-white, sometimes light pink to purplish-pink in upper part; segments 1.5-4.5 x 0.2-1 (-1.2) cm, linear to oblanceolate, each segment 7-15 veins, white to lilac or purplish-pink, not tessellated, subobtuse to obtuse (rarely retuse), without auricles at base, filament channels shallow, puberulous at least on margins (rarely glabrous). Stamens 1/2, 1/3 or 2/3 of perianth limb in length; filaments 4-12 (-14) mm, white, with swollen yellow base, glabrous; anthers 2-8 (-10) x 0.5-1.2 mm, yellow, with membranous margin. Styles straight or slightly curved at apex, white, stigmas punctiform or decurrent for 0.5-1 mm. Capsule ground level, 1-3.5 (-4) x 0.5-1.5 cm, oblong to elliptic, light to dark brown dotted when dry, acute or acuminate, glabrous; seeds 2-3.5 (-4) mm diam., almost globose, brown. Flowering time, August-November; Leaves and fruiting time: February-May.

Similar species: Colchicum decaisnei Boiss. was confused with C. troodii Kotschy in Flora of Turkey vol. 8 (Brickell, 1984). When Flora of Turkey vol.11 was published in 2000, the identification was changed from C. troodii to C. decaisnei. Since Boissier’s time, the name C. decaisnei has been used to include almost any Colchicum in South-West Asia with hysteranthous leaves. However, in modern times the taxonomic confusion involving C. decaisnei, C. hierosolymitanum Feinbrun, C. polyphylum Boiss. & Heldr., C. persicum Baker, C. feinbruniae K.M. Perss., and C. troodii Kotschy has been clarified in specific papers (such as Feinbrun in 1953, Persson in 1993, 1999b) (Persson, 2000).

C. decaisnei is similar to C. troodii Steven and so differences between the 2 species are shown in Table 11.

Habitat: Openings of forest and maquis, rocky and stony slopes, moist meadows.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th>C. decaisnei</th>
<th>C. troodii</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corm tunics</td>
<td>membranous or subcoriaceous</td>
<td>papery</td>
</tr>
<tr>
<td>Leaves</td>
<td>suberect to arcuate-procumbent linear-lanceolate to lanceolate or narrowly ovate channelled at least in lower part margins slightly undulate</td>
<td>erecto-patent ligulate flat hardly twisted</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>linear to oblanceolate</td>
<td>narrowly oblanceolate</td>
</tr>
<tr>
<td>Filament channels</td>
<td>puberulous at least on margins</td>
<td>glabrous</td>
</tr>
<tr>
<td>Filaments</td>
<td>4-12 (-14) mm</td>
<td>15-20 mm</td>
</tr>
<tr>
<td>Capsule</td>
<td>oblong to elliptic acute or acuminate</td>
<td>only ellipsoidal rostrate</td>
</tr>
</tbody>
</table>
The Brazil nut, 12.2 km N. of Yayla Daği, 700 m, Sønderhousen 1041. Mağaracık, 20 m, Pasche & Schacht 89-07. C6 Hatay: Baflköy, 175-250 m, K. Persson 469. C5 Hatay: L78/T44; Demirtaş to Göktepe, 12 and 15 km before Antalya: Alanya, rocky slope near the castle, 250 m, Leep 2 km off the main road, 850 m, K. Persson 432. C4 389; Manavgat to Akseki, 4 km N. of Fersin, forest road Kuzdere, 600 m, Kerndorff & Pasche 96-16; pass S. of element.

12. *Colchicum balansae* Planch. in Ann. Sci. Nat. ser. 4, 4: 145 (1855). (Figure 12).


= *C. candidum* Schott & Kotschy ex Boiss., Fl. Or. 5: 159 (1882).

*Description*: Corm 2-7 (-9) x 1.5-6 (-8) cm, ovoid to subglobose; outer tunics coriaceous, dark brown to blackish-brown, inner tunics membranous to subcoriaceous, reddish-brown to light brown; neck present, 20-50 x 0.5-2 (-3) cm, strongly fibrose. Cataphyll as long as neck, white or yellowish-white. Leaves hysteranthous, 3-5, suberect to spreading, 15-30 (-35) x 2-8 (-10) cm at maturity, outer ones lanceolate to oblong or oblong-elliptic, inner ones lanceolate to linear-lanceolate, obtuse, margins slightly undulate, glabrous. Flowers 3-8 (-12), funnel-shaped; perianth tube exceeding the cataphyll by 1.5-6 (-9) cm, white or cream; segments 3-7 x 0.4-2.8 cm, linear to broadly elliptic, each segment 10-18 veins, white to pale lilac or purplish-pink, not tessellated, subacute to obtuse, without auricles at base, filament channels shallow, glabrous. Stamens 1/3 to 1/2 or more longer of perianth limb in length; filaments 8-25 (-30) mm, white, with swollen yellowish base, glabrous; anthers 8-15 (-18) x 0.8-1 (-1.2) mm, yellow, with membranous margin. Styles curved at apex, white sometimes pinkish-purple at apex, stigmas decurrent for 1-3 mm. Capsule ground level, 2-4.5 (-5) x 1-2 (-2.5) cm, oblong-ovoid to oblong-elliptic, brown or blackish dotted when dry, rostrate, glabrous; seeds 2-4 (-5) mm diam., almost globose, reddish-brown to brown. Flowering time, August-November; Leaves and fruiting time: March-June.

*Similar species*: *C. balansae* was indicated as an endemic species in Flora of Turkey vol. 8 (Brickell, 1984). Persson (1999b) stated that this species was collected in Poros by Melvyn Jope in 1984; for this reason, *C. balansae* is not an endemic species for Turkey.

It is similar to *C. dolichantherum* K.M.Perss. and *C. imperatoris-friderici* Siehe ex K.M.Perss.; differences are shown in Table 12.
Table 12. Comparison of morphological characteristics between *C. balansae*, *C. dolichantherum*, and *C. imperatoris-friderici*.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th><em>C. balansae</em></th>
<th><em>C. dolichantherum</em></th>
<th><em>C. imperatoris-friderici</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Corm</td>
<td>ovoid to subglobose</td>
<td>ovoid to ovoid-globose</td>
<td>narrowly ovoid to broadly ovoid</td>
</tr>
<tr>
<td>Neck</td>
<td>being up to 50 cm long</td>
<td>being up to 20 cm long</td>
<td>being up to 15 cm long</td>
</tr>
<tr>
<td></td>
<td>strongly fibrose</td>
<td>thinly fibrose</td>
<td>not strongly fibrose</td>
</tr>
<tr>
<td>Cataphyll</td>
<td>as long as neck completely white or yellowish-white</td>
<td>longer than neck sometimes purplish-red in upper part</td>
<td>longer than neck cream or yellowish-white, sometimes reddish-purple in upper part</td>
</tr>
<tr>
<td>Leaves</td>
<td>suberect to spreading linear-lanceolate, lanceolate to oblong or oblong-elliptic with glabrous margin</td>
<td>only spreading oblong-lanceolate to ligulate or elliptic with scabrose or shortly ciliate margin</td>
<td>suberect to spreading narrowly oblong to oblong-elliptic or ovate-oblong with glabrous margin</td>
</tr>
<tr>
<td>Perianth tube</td>
<td>white or cream</td>
<td>white or cream</td>
<td>yellowish-white or sometimes lilac in upper part</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>linear to broadly elliptic subacute to obtuse</td>
<td>linear to oblong subobtuse to obtuse</td>
<td>oblong to oblong-ellipsoid obtuse to retuse</td>
</tr>
<tr>
<td>Filament channels</td>
<td>glabrous</td>
<td>glabrous or shortly ciliate at least on margins</td>
<td>densely pubescent</td>
</tr>
<tr>
<td>Filament</td>
<td>8-25 (-30) mm completely white with swollen yellowish base</td>
<td>6-20 mm white or cream with orange yellow base</td>
<td>5-10 (-12) mm white or cream, usually light pink in upper part with swollen brownish-yellow base</td>
</tr>
<tr>
<td>Anthers</td>
<td>with membranous margin</td>
<td>slightly or without membranous</td>
<td>with membranous margin</td>
</tr>
<tr>
<td>Capsule</td>
<td>oblong-ovoid to oblong-elliptic</td>
<td>margin elliptic to oblong-elliptic</td>
<td>only elliptic</td>
</tr>
</tbody>
</table>

**Habitat:** Clearings of *Pinus, Cedrus, Olea, Abies*, and *Eucalyptus* forest, maquis, rocky and stony slopes, moist meadows.

**Altitudinal range:** 50-2000 m.

**Turkey distribution:** South and West Anatolia.

**World distribution:** Greece.

**Phytogeographical status:** East Mediterranean element.

**Flora of Turkey records:**

- **C1 Muğla:** 16 km from Knidos to Datça, 350 m, T. Baytop & Leep (ISTE 36236, fl.).
- **C2 Muğla:** Gökova to Marmaris, nr Akçapınar, 100 m, Brickell & Mathew 8299 (leaf). Antalya: Kaş to Demre, 15 km from Demre, 550 m, T. Baytop (ISTE 36677, leaf & fr.).
- **C3 Antalya:** Manavgat to Akseki, nr Murtiçi, 880 m, T. Baytop (ISTE 36680, leaf & fr.).
- **C5 İçel:** nr Fındıkpınar, Siehe 90 (fl.).
- **C6 Gaziantep:** Gaziantep, Aysoy 440 (fl.).

**Specimens examined:**

- **C1 Muğla:** Marmaris to Datça, 14 km to Datça, 100 m, 9.xi.1984, T. Baytop (ISTE 55081) - Datça to Knidos, 14 km from Datça, 350 m, 2.x.1976, T. Baytop (ISTE 36236, ISTF 39057) - Bodrum, Akçabük valley, 18.xi.1972, N. Aktaç (ISTF 39065) - Marmaris, Bayır village, moist meadows, 142 m, 20.x.2002, 36° 41’ 600” N, 28° 10’ 134” E, O.D. Düfen (2573), S. Düfen, K. Çetinkaya (AKDU) - Datça, 1 km from Yaka village, under O. europeae, 140 m, 19.x.2002, 36° 41’ 683” N, 27° 28’ 323” E, O.D. Düfen (2572), S. Düfen, K. Çetinkaya (AKDU).

- **C2 Muğla:** Manavgat to Akseki, nu Murtiçi, 880 m, 3.v.1980, T. Baytop (ISTE 44120) - Marmaris to Bozburun, 21 km to Bozburun, *Pinus* forest, 250 m.

13. Colchicum variegatum L., Sp. Pl. 342 (1753). (Figure 13).
Typus: [Islands] Khios.

= C. parkinsonii Hooker in Bot. Mag. 100: t. 6090 (1894).


= C. agrippinum auct. non Hort. ex Baker in J. Linn. Soc. (Bot.) 17: 425 (1829).

Description: Corm 2-6 (-8) x 2-4.5 (-5) cm, ovoid to subglobose; outer tunics subcoriaceous to coriaceous, dark brown to blackish-brown, inner tunics membranous to subcoriaceous, light brown to reddish-brown; neck present, (2-) 3-15 x 0.5-1.5 (-1.8) cm. Cataphyll almost as long as neck, cream or yellowish-white. Leaves hysteranthous, 3-4, suberect to spreading, 6-13 (-15) x 0.7-2 (-2.5) cm at maturity, linear-lanceolate to ligulate, obtuse to acute, margins conspicuously undulate, glabrous. Flowers 1-2 (-3), rotate; perianth tube exceeding the cataphyll by 2-10 cm, white or yellowish-white; segments 2-5.5 (-7) x 0.5-2.5 cm, lanceolate to elliptic, each segment 10-21 veins, light or dark violet-purple, strongly tessellated, obtuse to acute, without auricles at base, filament channels glabrous. Stamens 1/2 or more longer of perianth limb in length; filaments 1.5-3.5 (-4) cm, white, cream or yellowish-white, glabrous; anthers 4-10 x 0.5-1.2 mm, purple, purplish-black or purplish-brown, without membranous margin. Styles straight or slightly curved and swollen at apex, cream, yellowish-white, light purplish-pink or violet-purple, stigmas recurrent for 0.5-2 mm. Capsule 1-4 x 0.8-1.5 (-2) cm, elliptic to oblong-ovoid, light or dark brown doted when dry, obtuse, glabrous; seeds 1.5-4 mm diam., ovoid to subglobose, sometimes flattened laterally, light to dark brown. Flowering time, September-November; Leaves and fruiting time: February-May.

Similar species: C. variegatum is related to C. agrippinum Hort. ex Baker, which is a cultivated plant of unknown origin; differences are shown in Table 13.

Habitat: Rocky and stony slopes, among limestone boulders in rich terra rossa, clearings of Quercus coccifera, Erica and Juniperus scrubs, openings of Pinus and Abies forest, maquis.

Altitudinal range: 150-1700 m.

Turkey distribution: South, West, and Central Anatolia.

World distribution: Greece, Cyclades.

Phytogeographical status: East Mediterranean element.

Flora of Turkey records: B1 İzmir: Tahtalı Da., Borm. 1906: 10038 (leaf). C1 Aydın: Dilek Yarımadası, A. Baytop (ISTE 26818, fl.). C2 Muğla: Muğla to Kale, 1000 m, T. Baytop et al. (ISTE 33913, fl.). Antalya: Elmali to Kaş, 1400 m, T. Baytop & Leep (ISTE 36228, fl.). C3 Antalya: Yarpuz Da., 1200 m, D. 25780. Burdur: Burdur to Bucak, 5 km to Çeltikçi, T. Baytop et al. (ISTE 33889, fl.). Konya: 72 km from Beyşehir to Akseki, 1350 m, A. Baytop (ISTE 26887, fl.). C4 Antalya: Gündoğmuş, 1370 m, Allison et al. 77-8 (fl.).

Specimens examined: B1 İzmir: Bornova, Kurutepe, 3.iii.1978, T. Baytop (ISTE 38949) - Kemalpaşa, Karabel, under the Pinus forest, 1300 m, 10.x.1973, T. Baytop (ISTE 38963) - Karabel, Kemalpaşa, 1300 m, 10.x.1973, Baytop (ISTE 26755) - Nif mountain, 550 m, 10.x.1973, T. Baytop et al. (ISTE 26766) - Dilek Peninsula, maquis, 13.x.1973, A. Baytop (ISTE 38961) - Priene Ancient City, 900 m, 14.x.1973, G. Semiz (1429) (AKDU) - Marmaris to Datça, Pinus-Erica openings, 10.x.1975, T. Baytop et al.

Table 13. Comparison of morphological characteristics between C. variegatum and C. agrippinum.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th>C. variegatum</th>
<th>C. agrippinum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves</td>
<td>with conspicuously undulate margins</td>
<td>with slightly undulate margins</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>obtuse to acute strongly tessellated</td>
<td>subobtuse less pronounced tessellation</td>
</tr>
</tbody>
</table>
A Morphological Investigation of *Colchicum* L. (Liliaceae) Species in the Mediterranean Region in Turkey


14. *Colchicum cilicicum* (Boiss.) Dammer in Gard. Chron. ser. 3, 23:34, f. 12 (1898). (Figure 14).

Syntypus: [Turkey C5 İz] in Tauro Cilicico a pago Gülek usque ad regionem Cedrorum, 1220-1980 m. [22.i.1853], Kotschy 84 (G.K): ibid., Balansa (G); ad pyla Cilicicas (Gülek Boğazı), Heldreich (G); [C5 Hatay] in cacumine montis Cassil(Akra Da.), Boissier (G).

= *C. byzantinum* Ker-Gawler var. *cilicicum* Boiss., Fl. Or. 5: 160 (1882).


= *C. byzantinum* auct. non Ker-Gawler sub Bot. Mag. 25: t. 1028 (1807).

**Description:** Corm 2-7 x 1.5-5.5 (-6) cm, ovoid to subglobose; outer tunics papery to subcoriaceous,
reddish-brown to dark brown, inner tunics membranous, yellowish-brown to reddish-brown; neck present, 3-15 (-17) x 0.8-2 (-2.2) cm. Cataphyll 3.5-18 (-20) x 0.5-2 cm, white or cream, sometimes purplish-red in upper part. Leaves hysteranthous, 3-5, suberect to spreading, 15-30 (-40) x 3-10 (-12) cm at maturity, oblong-lanceolate to elliptic-lanceolate or narrowly elliptic-ovate, subobtuse to obtuse, margins slightly undulate, glabrous. Flowers 1-15 (-25), funnel-shaped to campanulate; perianth tube exceeding the cataphyll by 2-15 cm, white or cream, sometimes purplish in upper part; segments 3-7 (-7.5) x 0.7-2.5 (-2.8) cm, narrowly elliptic to oblanceolate or obovate, each segment 10-15 (-20) veins, light pinkish-purple to violet-purple, slightly or sometimes strongly tessellated, acuminate to obtuse, without auricles at base, filament channels puberulous or pubescent. Stamens longer than 1/2 of perianth limb in length; filaments 1.5-3.5 (-4) cm, white or cream, sometimes lilac in upper part, with slightly swollen light yellow to golden yellow base, glabrous; anthers 5-10 x 0.8-1.2 mm, yellow, without membranous margin. Styles longer than stamens, filiform, straight or slightly curved at apex, stigmas punctiform or decurrent for 0.4-1 mm. Capsule 2-4 x 1.5-2.5 cm, elliptic to ovoid, reddish-brown or brown dotted when dry, rostrate, glabrous; seeds 2.5-4 mm diam., almost globose, light to dark brown. Flowering time, August-November; Leaves and fruiting time: April-June.

Similar species: C. ciliicum is similar to C. davisii C.D.Brickell, C. dolichantherum K.M.Perss., and C. imperatoris-friderici Sieve ex K.M.Perss., and so differences between these species are shown in Table 14.

Habitat: Rocky and stony slopes, clearings of Pinus, Quercus, and Olea forest.

Altitudinal range: 250-2500 m.

Turkey distribution: South and West Anatolia.

World distribution: Syria, Lebanon.

Phytogeographical status: East Mediterranean element.

Flora of Turkey records: C3 Isparta: Dedegöl Da., 1600 m, cult. K, 14.viii.1975, Sorger s.n. (fl.). C4 Çel: Gülnar to Silifke, 1100 m, Brickell & Mathew 8442. C5 Çel: 11-12 km S.E. of Gül, 1500 m, Siehe 1895: 323 (fl.). Niğde: Ulukele, Alıhoca, 1200 m, Erik 2921 (leaf). Adana: nr Misis (Misis) on Pyramus (Ceyhan river), Siehe 94. Hatay: summit of Cassius (Akra Da.), Thiébaut. C6 Adana: Osmaniye to Sorgun Y., 1300 m, Kasaplıgil 91 (fl.). Maraş: 10 km N. of Andirin, 1000 m, Sorger 73-13-37 (leaf & fr.).

### Table 14. Comparison of morphological characteristics between C. cilicicum, C. davisii, C. dolichantherum, and C. imperatoris-friderici.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th>C. cilicicum</th>
<th>C. davisii</th>
<th>C. dolichantherum</th>
<th>C. imperatoris-friderici</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corm</td>
<td>ovoid to subglobose</td>
<td>elliptic to oblong-ovoid or asymmetric ovoid</td>
<td>ovoid to ovoid-globose</td>
<td>narrowly ovoid to broadly ovoid</td>
</tr>
<tr>
<td>Outer tunics</td>
<td>papery to subcoriaceous reddish-brown to dark brown</td>
<td>membranous light brown to brown</td>
<td>subcoriaceous to coriaceous dark brown to blackish-brown</td>
<td>coriaceous to papery brown to dark brown</td>
</tr>
<tr>
<td>Cataphyll</td>
<td>white or cream, sometimes purplish-red in upper part</td>
<td>completely light yellow or whitish-yellow</td>
<td>cream or yellowish-white, sometimes purplish-red in upper part</td>
<td>cream or yellowish-white, sometimes reddish-purple in upper part</td>
</tr>
<tr>
<td>Leaves</td>
<td>suberect to spreading oblong-lanceolate to elliptic-lanceolate or narrowly elliptic-ovate glabrous</td>
<td>suberect to spreading lanceolate-oblong to oblong glabrous</td>
<td>only spreading oblong-lanceolate to ligulate or elliptic scabrose to shortly ciliate</td>
<td>suberect to spreading narrowly oblong to oblong-elliptic or ovate-oblong</td>
</tr>
<tr>
<td>Flowers</td>
<td>funnel-shaped to campanulate</td>
<td>narrowly campanulate</td>
<td>only funnel-shaped</td>
<td>only funnel-shaped</td>
</tr>
<tr>
<td>Perianth tube</td>
<td>white or cream, sometimes lilac in upper part</td>
<td>white or yellowish-white, sometimes lilac in upper part</td>
<td>completely white or cream</td>
<td>yellowish-white or cream, sometimes purplish-pink in upper part</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>narrowly elliptic to oblong-lanceolate or obovate light pinkish-purple to violet-purple slightly or sometimes strongly tessellated</td>
<td>narrowly oblong to elliptic-oblong to oblong-lanceolate white, light or dark lilac slightly or sometimes strongly tessellated</td>
<td>linear to oblong white, light or dark lilac not tessellated</td>
<td>oblong to oblong-lanceolate white, light pink or purplish-pink not tessellated</td>
</tr>
<tr>
<td>Filament channels</td>
<td>puberulous or pubescent</td>
<td>puberulous to pubescent</td>
<td>glabrous or shortly ciliate at least on margins</td>
<td>densely pubescent</td>
</tr>
<tr>
<td>Filaments</td>
<td>15-35 (-40) mm white or cream, sometimes lilac in upper part slightly with swollen light yellow to golden yellow base</td>
<td>(10-) 12-22 mm completely whitish with swollen light yellow base</td>
<td>6-20 mm completely white or cream with swollen light orange yellow base</td>
<td>5-10 (-12) mm white or cream, usually light pink in upper part with brownish-yellow base</td>
</tr>
<tr>
<td>Anthers</td>
<td>5-10 x 0.8-1.2 mm without membranous margin</td>
<td>(9-) 10-16 x 1-2 mm without membranous margin</td>
<td>5-15 x 1-1.5 mm slightly membranous margin or not</td>
<td>5-10 x 0.8-1.5 mm with membranous margin</td>
</tr>
<tr>
<td>Styles</td>
<td>straight or slightly curved at apex</td>
<td>swollen and curved at apex</td>
<td>thick and curved at apex</td>
<td>thickened and hooked to curved at apex</td>
</tr>
<tr>
<td>Stigmas</td>
<td>punctiform or decurrent or 0.4-1 mm</td>
<td>decurrent for 2-5 mm</td>
<td>decurrent for up to 2 mm</td>
<td>decurrent for 0.5-2 mm or not</td>
</tr>
<tr>
<td>Capsule</td>
<td>elliptic to ovoid</td>
<td>elliptic to oblong-elliptic</td>
<td>elliptic to oblong</td>
<td>only elliptic</td>
</tr>
<tr>
<td>Seeds</td>
<td>2.5-4 mm diam.</td>
<td>(3-) 4-5 mm diam.</td>
<td>2-4.5 mm diam.</td>
<td>2-4 mm diam.</td>
</tr>
</tbody>
</table>
15. *Colchicum sanguicolle* K.M.Perss. in Edinb. J. Bot. 56: 92, f. 1E, 4B (1999). (Figure 15).


Description: Corm 2.5-4.5 (-6) x 1.5-4.5 cm, usually asymmetric, ovoid-oblong to ovoid; tunics membranous, light brown to reddish-brown; neck present, 3-8 (-10) x 0.6-1.5 (-2) cm. Cataphyll 5-15 x 0.4-1.2 (-1.5) cm, completely or in upper part reddish-purple, white or cream, sometimes purplish-red at apex. Leaves hysteranthous, 3 (-4), suberect to spreading, 18-28 (-30) x 3-4 (-5) cm at maturity, ligulate, obtuse to subobtuse, margins slightly undulate, glabrous. Flowers (1-) 2-4, campanulate; perianth tube exceeding the cataphyll by 1-8 (-10) cm, white or yellowish-white, sometimes purplish-pink in upper part; segments 2.5-6 x 0.8-2.5 cm, elliptic to oblanceolate or obovate, each segment 10-30 veins, pinkish-purple to violet-purple, white or yellowish-white at base, not tessellated, subobtuse to subobtuse or subulate, without auricles at base, cucullate, filament channels glabrous and 1-3 filiform teeth. Stamens 1/2 to 2/3 of perianth limb in length; filaments 1-3.5 (-4) cm, white or cream, with swollen yellow base, glabrous; anthers 4-10 (-12) x 0.8-1.5 (-2) mm, yellow, without membranous margin. Styles equal or longer than stamens, straight or slightly curved at apex, white or cream, stigmas punctiform or decurrent for 0.4-0.6 mm. Capsule ground level, 1.5-3.5 x 0.8-1.5 (-1.8) cm, oblong-elliptic to oblong-ovoid, dark brown or blackish-brown dotted when dry, obtuse to apiculate, glabrous; seeds 2-4 (-5) mm diam., ovoid to globose, reddish-brown to dark brown. Flowering time, September-October; Leaves and fruiting time: May-June.

Similar species: Because of the long styles and the size of the leaves, *C. sanguicolle* was included in *C. cilicicum* in Flora of Turkey vol. 8 (Brickell 1984), but it was described as a new species from Ak Dağ, Yeşilgöl (Elmalı/Antalya) by K.M. Persson in 1999. These distributions of the 2 species are distinctly separate. While *C. sanguicolle* is distributed in the west of the Mediterranean region, *C. cilicicum* is distributed in the centre and east of the Mediterranean region. In addition, differences between these species are shown in Table 15.
Table 15. Comparison of morphological characteristics between C. sanguicolle and C. cilicicum.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th>C. sanguicolle</th>
<th>C. cilicicum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corm</td>
<td>ovoid-oblong to ovoid</td>
<td>ovoid to subglobose</td>
</tr>
<tr>
<td>Outer tunics</td>
<td>membranous light brown to reddish-brown</td>
<td>papery to subcoriaceous reddish-brown to dark brown</td>
</tr>
<tr>
<td>Cataphyll</td>
<td>completely or in upper part reddish-purple</td>
<td>white or cream, sometimes purplish-red in upper part</td>
</tr>
<tr>
<td>Leaves</td>
<td>ligulate</td>
<td>oblong-lanceolate to elliptic-lanceolate or narrowly elliptic-ovate</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>pinkish-purple to violet-purple, white or yellowish-white at base not tessellated subobtuse to reuse</td>
<td>light pinkish-purple to violet-purple, not white or yellowish white at base slightly or sometimes strongly tessellated acuminate to obtuse</td>
</tr>
<tr>
<td>Filament channels</td>
<td>glabrous and 1-3 filiform teeth</td>
<td>filament channels puberulous or pubescent and not 1-3 filiform teeth</td>
</tr>
<tr>
<td>Capsule</td>
<td>oblong-elliptic to oblong-ovoid dark brown or blackish-brown dotted when dry obtuse to apiculate</td>
<td>elliptic to ovoid reddish-brown or brown dotted when dry rostrate</td>
</tr>
<tr>
<td>Seeds</td>
<td>ovoid to globose</td>
<td>almost globose</td>
</tr>
</tbody>
</table>

**Habitat:** Moist meadows, rocky and stony slopes, edges of Cedrus forest.

**Altitudinal range:** 1200-1880 m.

**Turkey distribution:** South and West Anatolia. Endemic (EN).

**Phytogeographical status:** East Mediterranean element.

**Flora of Turkey records:** C2 Muğla: Baba Dağ near Fethiye, cult. K 16.x.1977, Polunin 14920; ibid. above Ovacık, 1200-1250 m, K. Persson 513. Antalya: Gömöbeli (Gülübeli Geçidi) to Seki, 1750 m, Kerndorff & Pasche 93-68; Elmalı, Ak Dağ, Yeşilgöl, 1600-1800 m, Sarıyar (ISTE 44511). C3 Antalya: Tahtalı Dağ, 1350 m, Kerndorff & Pasche 96-17.


**Description:** Corm 3.5-8 x 1.5-4.5 (-5) cm, elliptic to oblong-ovoid or asymmetric ovoid; tunics membranous, light brown to brown; neck present, 3-12 (-14) x 1-2.5 cm. Cataphyll stout. (5-) 8-20 x 0.4-1.2 (-1.5) cm, light yellow or whitish-yellow. Leaves hysteranthous, 3, suberect to spreading, 15-35 x 4.5-8 cm at maturity,
lanceolate-oblong to oblong, subacute to obtuse, margins slightly undulate or flat, glabrous. Flowers 1-5 (-10), narrowly campanulate; perianth tube exceeding the cataphyll by 2-15 cm, white or yellowish-white, sometimes purplish-pink in upper part; segments 3.5-6.5 x 0.8-1.5 (-2) cm, narrowly oblong to elliptic-oblong to oblong-lanceolate, each segment 10-21 (-23) veins, pinkish-purple to violet-purple, slightly or sometimes strongly tessellated, acuminate to rounded, without auricles at base, cucullate, filament channels distinct, puberulous to pubescent. Stamens 1/2 to 1/3 of perianth limb in length; filaments (10-) 12-22 mm, whitish, with swollen light yellow base, glabrous; anthers (9-) 10-16 x 1-2 mm, yellow, without membranous margin. Styles longer than stamens, swollen and curved at apex, white, stigmas decurrent for 2-5 mm. Capsule 1.5-3 x 0.8-1.5 cm, elliptic to oblong-elliptic, rostrate, glabrous; seeds (3-) 4-5 mm diam., subglobose, reddish-brown to dark brown. Flowering time, August-September; Leaves and fruiting time: April-June.

Similar species: C. davisii, which was described as a new species from Dumanlı Mountain (Haruniye/Adana) by C.D. Brickell in 1998, is related to C. cilicicum (Boiss.) Dammer, and C. speciosum Steven. Comparison of morphological characteristics between these species is shown in Table 16.

Habitat: Openings of forest, moist meadows, rocky and stony slopes.

Altitudinal range: 1000-1950 m.

Turkey distribution: South and South-East Anatolia. Endemic (EN).

Phytogeographical status: East Mediterranean element.

Flora of Turkey records: C6 Adana: mountain above Osmaniye, 8.ix.1884, Pos; Mont. Amanus, Haradjian 168. Gaziantep: Kartal Dağı, 45 km before Gaziantep from Nur Dağı Geçidi, 1050 m, Kammerl. & al. 90-100.

Specimens examined: C6 Osmaniye: Düziçi, Haruniye, Dumanlı mountain, Oğulluk, openings of forest, 1280 m, 4.ix.2003, 37° 16’ 093” N, 36° 30’ 905” E, O.D. Düfen (2627), S. Düfen, K. Çetinkaya (AKDU) - Düziçi, Haruniye, Dumanlı mountain, Dumanlı, openings of forest, 1400 m, 4.ix.2003, 37° 16’ 483” N, 36° 31’ 357” E, O.D. Düfen (2628), S. Düfen, K. Çetinkaya (AKDU).

17. Colchicum dolichantherum K.M.Perss. in Edinb. J. Bot. 56: 126, f. 2C-D, 4D (1999). (Figure 17).


Description: Corm 3-6.5 x 2.5-5 (-5.5) cm, ovoid to ovoid-globose; outer tunics subcoriaceous to coriaceous, dark brown to blackish-brown, inner tunics membranous, yellowish-brown to reddish-brown; neck present, 3-20 x 0.5-1.5 cm, thinly fibrose. Cataphyll 5-22 x 0.2-1.2 cm, cream or yellowish-white, sometimes purplish-red in upper part. Leaves hysteranthous, 4-5 (-6), spreading, 18-50 (-55) x 3.5-12 cm at maturity, oblong-lanceolate.
Table 16. Comparison of morphological characteristics between *C. davisii*, *C. cilicicum*, and *C. speciosum*.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th><em>C. davisii</em></th>
<th><em>C. cilicicum</em></th>
<th><em>C. speciosum</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Corm</td>
<td>elliptic to oblong-ovoid or asymmetric ovoid</td>
<td>ovoid to subglobose</td>
<td>oblong-ovoid</td>
</tr>
<tr>
<td>Outer tunics</td>
<td>membranous light brown to brown</td>
<td>papery to subcoriaceous reddish-brown to dark brown</td>
<td>papery to subcoriaceous dull mid-brown</td>
</tr>
<tr>
<td>Cataphyll</td>
<td>completely light yellow or whitish-yellow</td>
<td>white or cream, sometimes purplish-red in upper part</td>
<td>---</td>
</tr>
<tr>
<td>Leaves</td>
<td>3 suberect to spreading lanceolate-oblong to oblong subacute to obtuse</td>
<td>3-5 suberect to spreading oblong-lanceolate to elliptic-lanceolate or narrowly elliptic-ovate subobtuse to obtuse</td>
<td>(3-) 4-5 only suberect narrowly elliptic to oblong-lanceolate only obtuse</td>
</tr>
<tr>
<td>Flowers</td>
<td>narrowly campanulate</td>
<td>funnel-shaped to campanulate</td>
<td>narrowly campanulate to campanulate</td>
</tr>
<tr>
<td>Perianth tube</td>
<td>white or yellowish-white, sometimes purplish-pink in upper part</td>
<td>white or cream, sometimes purplish in upper part</td>
<td>green or white flushed purple</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>3.5-6.5 x 0.8-1.5 (-2) cm narrowly oblong to elliptic-oblong to oblong-lanceolate white, light or dark lilac slightly or sometimes strongly tessellated acuminate to rounded</td>
<td>3.7 (-7.5) x 0.7-2.5 (-2.8) cm narrowly elliptic to oblong-lanceolate or obovate light pinkish-purple to violet-purple lightly or sometimes strongly tessellated acuminate to obtuse</td>
<td>(4.5-) 6.7 (-8) x (1-) 1.8-2.7 cm oblong-lanceolate to oblong-lanceolate or elliptic pale to deep rosy-purple not tessellated rounded to subacute</td>
</tr>
<tr>
<td>Filaments</td>
<td>(10-) 12-22 mm completely whitish with swollen light yellow base</td>
<td>15-35 (-40) mm white or cream, sometimes lilac in upper part with slightly swollen light yellow to golden yellow base</td>
<td>10-18 mm</td>
</tr>
<tr>
<td>Anthers</td>
<td>(9-) 10-16 x 1-2 mm</td>
<td>5-10 x 0.8-1.2 mm</td>
<td>10-12 x 1-2 mm</td>
</tr>
<tr>
<td>Styles</td>
<td>swollen and curved at apex</td>
<td>straight or slightly curved at apex</td>
<td>curved but not or only very slightly swollen at apex</td>
</tr>
<tr>
<td>Stigmas</td>
<td>decurrent for 2-5 mm</td>
<td>punctiform or decurrent for 0.4-1 mm</td>
<td>decurrent for 2-4 mm</td>
</tr>
<tr>
<td>Capsule</td>
<td>1.5-3 x 0.8-1.5 cm elliptic to oblong-elliptic rostrate</td>
<td>2.4 x 1.5-2.5 cm elliptic to ovoid rostrate</td>
<td>4.5 x 2.5-3 cm ellipsoid acute</td>
</tr>
<tr>
<td>Seeds</td>
<td>(3-) 4-5 mm diam.</td>
<td>2.5-4 mm diam.</td>
<td>---</td>
</tr>
</tbody>
</table>
to ligulate or elliptic, cucullate, obtuse to retuse, margins slightly undulate, scabrose to shortly ciliate. Flowers 2-15, funnel-shaped; perianth tube exceeding the cataphyll by 1.5-6.5 cm, white or cream; segments 2-5 (-5.5) x 0.4-1.3 (-1.5) cm, linear to oblong, each segment 7-25 veins, white, light or dark lilac, not tessellated, subobtuse to obtuse, without auricles at base, filament channels glabrous or shortly ciliate at least on margins. Stamens 1/2 to 1/3 of perianth limb in length; filaments 6-20 mm, white or cream, with swollen orange yellow base, glabrous; anthers 5-15 x 1-1.5 mm, yellow, slightly membranous margin or not. Styles equal or longer than stamens, thick and curved at apex, stigmas decurrent for 0.5-2 mm or not. Capsule ground level, 2-5 x 1-2.5 cm, elliptic to oblong, rostrate, brown dotted when dry, glabrous; seeds 2-4.5 mm diam., subglobose, reddish-brown to brown. Flowering time, August-November; Leaves and fruiting time: April-June.

**Similar species:** *C. dolichantherum* was described as a new species by Karin Persson in 1999. This species is similar to *C. balansae* Planch. and *C. ciliicum* (Boiss.) Dammer, and so differences between these species are shown in Table 17.

**Habitat:** Moist meadows, *Quercus* shrubs, rocky and stony slopes, clearings of maquis.

**Altitudinal range:** 30-1500 m.

**Turkey distribution:** South and South-East Anatolia.

**World distribution:** North Syria.

**Phytogeographical status:** East Mediterranean element.


**Specimens examined:** C6 Adana/Gaziantep: Nur mountain, Gökhöyük, Islahiye Erosion Control Area, moist slopes, 520 m, 27.x.2001, 37° 09’ 508” N, 36° 43’ 001” E, O.D. Düşen (2459), S. Düşen, K. Çetinkaya (AKDU) - Fevzipaşa, forest openings, 607 m, 28.x.2001, 37° 06’ 209” N, 36° 39’ 244” E, O.D. Düşen (2461), S. Düşen, K. Çetinkaya (AKDU) - Nur mountain, Gökhöyük, northern moist slopes, 520 m, 28.x.2001, 37° 08’ 506” N, 36° 42’ 003” E, O.D. Düşen (2459), S. Düşen, K. Çetinkaya (AKDU) - Fevzipaşa, forest openings, 600-610 m, 1.vi.2002, O.D. Düşen (2461a), S. Düşen, K. Çetinkaya (AKDU).

18. *Colchicum imperatoris-friderici* Siehe ex K.M.Perss. in Edinb. J. Bot. 56: 129, f. 2E-F (1999). (Figure 18).

Typus: [Turkey C4 ‹çel] Unweit der Calycadnus [=Göksu river] bei der Kirche der heiligen Thekla, Seleucia [= Silifke], 100 m, October, Siehe Fl. orient. 99 (holo. JE; iso. LE).

**Description:** Corm (2.5-) 3-8 x 2-6 (-8) cm, narrowly ovoid to broadly ovoid; outer tunics coriaceous to papery, brown to dark brown, inner tunics membranous, yellowish-brown to light brown; neck present, 4-15 x 0.5-2 cm. Cataphyll 2-6 cm longer than neck, cream or
yellowish-white, sometimes reddish-purple in upper part. Leaves hysteranthous, 4-5 (-6), suberect to spreading, 10-45 x 3-9 (-11) cm at maturity, narrowly oblong to oblong-elliptic or ovate-oblong, obtuse to retuse, margins slightly undulate or flat, glabrous. Flowers 5-15 (-20), funnel-shaped; perianth tube exceeding the cataphyll by 2-8 (-10) cm, yellowish-white or cream, sometimes lilac in upper part; segments 3-5.5 (-6.5) x 0.5-1.7 cm, oblong to oblong-elliptic, each segment 10-20 veins, white, light pink or purplish-pink, not tessellated, obtuse to retuse, without auricles at base, filament channels distinct and densely pubescent. Stamens 1/2 to 1/3 of perianth limb in length; filaments 5-10 (-12) mm, white or cream, usually light pink in upper part, with swollen brownish-yellow base, glabrous; anthers 5-10 x 0.8-1.5 mm, yellow, with membranous margin. Styles equal or longer than stamens, white (rarely purplish at apex), thickened and hooked to curved at apex, stigmas decurrent for 0.5-2 mm or not. Capsule 1.5-4 x (0.8-) 1-1.5 cm, elliptic, rostrate, reddish-brown or dark brown dotted when dry, glabrous; seeds 2-4 mm diam., almost subglobose, sometimes flattened laterally, reddish-brown to brown. Flowering time. September-November; Leaves and fruiting time: March-May.

### Table 17. Comparison of morphological characteristics between *C. dolichantherum*, *C. balansae*, and *C. cilicicum*.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th><em>C. dolichantherum</em></th>
<th><em>C. balansae</em></th>
<th><em>C. cilicicum</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer tunics</td>
<td>subcoriaceous to coriaceous</td>
<td>dark brown to blackish-brown</td>
<td>coriaceous</td>
</tr>
<tr>
<td>Neck</td>
<td>being up to 20 cm long thinly fibrose</td>
<td>being up to 50 cm long strongly fibrose</td>
<td>being up to 15 (-17) cm long not fibrose</td>
</tr>
<tr>
<td>Cataphyll</td>
<td>longer than neck cream or yellowish-white, sometimes purplish-red in upper part</td>
<td>as long as neck completely white or yellowish-white</td>
<td>longer than neck white or cream, sometimes purplish-red in upper part</td>
</tr>
<tr>
<td>Leaves</td>
<td>spreading with scabrose or shortly ciliate margin</td>
<td>suberect to spreading with glabrous margin</td>
<td>suberect to spreading with glabrous margin</td>
</tr>
<tr>
<td>Flowers</td>
<td>funnel-shaped</td>
<td>funnel-shaped</td>
<td>funnel-shaped to campanulate</td>
</tr>
<tr>
<td>Perianth tube</td>
<td>white or cream</td>
<td>white or cream</td>
<td>white or cream, sometimes purplish in upper part</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>linear to oblong white, light or dark lilac not tessellated glabrous or shortly ciliate at least on margins</td>
<td>linear to broadly elliptic light pinkish-purple to violet-purple not tessellated glabrous white</td>
<td>narrowly elliptic to oblanceolate or obovate light pinkish-purple to violet-purple slightly or sometimes strongly tessellated puberulous or pubescent</td>
</tr>
<tr>
<td>Filaments</td>
<td>white or cream</td>
<td>white</td>
<td>white or cream, sometimes lilac in upper part</td>
</tr>
<tr>
<td>Styles</td>
<td>thick and curved at apex</td>
<td>curved at apex</td>
<td>straight or slightly curved at apex</td>
</tr>
<tr>
<td>Stigmas</td>
<td>decurrent for up to 2 mm</td>
<td>decurrent for 1-3 mm</td>
<td>punctiform or decurrent for up to 1 mm</td>
</tr>
<tr>
<td>Capsule</td>
<td>elliptic to oblong</td>
<td>oblong-ovoid to oblong-elliptic</td>
<td>elliptic to ovoid</td>
</tr>
</tbody>
</table>
Similar species: *C. imperatoris-friderici* is similar to *C. dolichantherum* K.M.Perss., *C. balansae* Planch., and *C. cilicicum* (Boiss.) Dammer, and so differences between these species are shown in Table 18.

**Habitat:** Moist meadows, openings of *Quercus* and *Abies*, rocky and stony slopes, edges of *P. brutia* and maquis.

**Altitudinal range:** 30-1760 m.

**Turkey distribution:** South Anatolia. Endemic (EN).

**Phytogeographical status:** East Mediterranean element.

**Flora of Turkey records:** C4 İçel: 40 km from Anamur to Ermenek, 1600-1650 m, Zetterlund 88-4; 20 km from Gülner to Silifke, 1100 m, K. Persson 442; Liman Castle peninsula, 4 km SW. of Taşucu, 35 km, Watson & al. 3908.

**Specimens examined:** C4 İçel: Anamur to Ermenek, 40-45 km from Anamur, *A. cilicica* openings, rocky and stony slopes, 1600-1700 m, 12.v.2002, O.D. Düşen (2518), S. Düşen, K. Çetinkaya (AKDU) - Anamur, Abanoz plateau, Evciaları, moist meadows, 1740 m, 4.x.2003, 36° 19' 863'' N, 32° 53' 246'' E, O.D. Düşen (2630), S. Düşen, K. Çetinkaya (AKDU) - Anamur-Ermenek road, Evciaları, moist meadows, 1760 m, 4.x.2003, 36° 19' 835'' N, 32° 53' 071'' E, O.D. Düşen (2631), S. Düşen, K. Çetinkaya (AKDU) - Anamur to Ermenek, 40-45 km from Anamur, *A. cilicica* openings, rocky and stony slopes, 1697-1700 m, 4.x.2003, 36° 16' 435'' N, 32° 55' 048'' E, O.D. Düşen (2632), S. Düşen, K. Çetinkaya (AKDU).

**19. Colchicum inundatum** K.M.Perss. in Edinb. J. Bot. 56: 99, f. 2B, 4D (1999). (Figure 19).

**Typus:** Turkey C3 Konya/Antalya: 20-30 km from Gencek to Aydinkent (İbradı), masses on large flat meadows (periodically waterlogged), 1200-1250 m, 17.iv.1991 (fr.), K. Persson 505 (holo. GB; iso. E).

**Description:** Corm 2-5 (-6) x 1.5-3.5 (-4.5) cm, ovoid to subglobose; outer tunics papery to subcoriaceous, dark brown to blackish-brown, inner tunics membranous, light brown to reddish-brown; neck present, stout, 5-15 (-18) x 0.5-1.3 (-1.5) cm. Cataphyll 4-20 x 0.3-0.8 cm, yellowish-white or cream. Leaves hysteranthous, 4-10 (-12), suberect to spreading, 10-16 x 3-5 cm at maturity, oblong-lanceolate, obtuse to turuncate, channelled in lower part, margins slightly undulate or flat, glabrous, scabrous or shortly ciliate. Flowers 1-5, funnel-shaped to narrowly campanulate; perianth tube exceeding the cataphyll by 3-8 cm, white, sometimes purplish-pink in upper part; segments 2-5 x 0.5-1 (-1.2) cm, narrowly oblong to elliptic or oblanceolate, each segment 7-15 veins, white, light pink or purplish-pink, very slightly tessellated, subacute to obtuse or retuse, without auricles at base, filament channels distinct, puberulous to pubescent. Stamens 1/2 to 1/3 or 1/4 of perianth limb in length; filaments 5-12 mm, white or yellowish-white, with swollen brownish-yellow or dark yellow base, glabrous; anthers 4-8 x 0.8-1.5 (-2) cm, yellow, with membranous margin. Styles equal or longer than stamens, white, sometimes purplish-pink in upper part, curved at apex, stigmas deciduous for 1-3 mm. Capsule ground level, (1.8-) 2-4.5 x 0.8-2 cm, oblong-elliptic to oblong, rostrate, brown or black dotted.
Table 18. Comparison of morphological characteristics between *C. imperatoris-friderici*, *C. dolichantherum*, *C. balansae*, and *C. cilicicum*.

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th><em>C. imperatoris-friderici</em></th>
<th><em>C. dolichantherum</em></th>
<th><em>C. balansae</em></th>
<th><em>C. cilicicum</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Corm</td>
<td>narrowly ovoid to broadly ovoid</td>
<td>ovoid to ovoid-globose</td>
<td>ovoid to subglobose</td>
<td>ovoid to subglobose</td>
</tr>
<tr>
<td>Neck</td>
<td>being up to 15 cm long not strongly fibrose</td>
<td>being up to 20 cm long thinly fibrose</td>
<td>being up to 50 cm long strongly fibrose</td>
<td>being up to 15 (-17) cm long not fibrose</td>
</tr>
<tr>
<td>Cataphyll</td>
<td>longer than neck cream being up to 50 cm long or yellowish-white, sometimes reddish-purple in upper part</td>
<td>as long as neck</td>
<td>completely white in upper part</td>
<td>white or cream, sometimes purplish-red in upper part</td>
</tr>
<tr>
<td>Leaves</td>
<td>suberect to spreading narrowly oblong to oblong-lanceolate or ovate-oblong with glabrous margin</td>
<td>only spreading</td>
<td>suberect to spreading</td>
<td>suberect to spreading</td>
</tr>
<tr>
<td></td>
<td>linear-lanceolate to ligulate or elliptic with scabrose or short ciliate margin</td>
<td>linear-lanceolate to oblong or oblong-elliptic with glabrous margin</td>
<td>linear-lanceolate to elliptic-lanceolate or narrowly elliptic-ovate with glabrous margin</td>
<td></td>
</tr>
<tr>
<td>Perianth tube</td>
<td>yellowish-white or purple, sometimes lilac in upper part</td>
<td>white or cream</td>
<td>white or cream</td>
<td>white or cream, sometimes purplish in upper part</td>
</tr>
<tr>
<td>Perianth segments</td>
<td>oblong to oblong-lanceolate not tessellated obtuse to retuse</td>
<td>linear to oblong not tessellated subacute to obtuse</td>
<td>linear to broadly elliptic not tessellated</td>
<td>narrowly elliptic to obovate slightly or sometimes strongly tessellated acuminate to obtuse</td>
</tr>
<tr>
<td>Filament channels</td>
<td>densely pubescent</td>
<td>glabrous or shortly ciliate at least on margins</td>
<td>subacute to obtuse glabrous</td>
<td>puberulous or pubescent</td>
</tr>
<tr>
<td>Filaments</td>
<td>5-10 (-12) mm white or cream, usually light pink in upper part with swollen brownish-yellow base</td>
<td>6-20 mm white or cream with orange yellow base</td>
<td>8-25 (-30) mm completely white with swollen yellowish base</td>
<td>15-35 (-40) mm white or cream, sometimes lilac in upper part with slightly swollen light yellow to golden yellow base</td>
</tr>
<tr>
<td>Anthers</td>
<td>with membranous margin</td>
<td>slightly or without membranous margin</td>
<td>with membranous margin</td>
<td>without membranous margin</td>
</tr>
<tr>
<td>Capsule</td>
<td>only elliptic reddish-brown or dark brown dotted when dry</td>
<td>elliptic to oblong-brown dotted when dry</td>
<td>oblong-ovoid to oblong-elliptic brown or blackish dotted when dry</td>
<td>elliptic to ovoid reddish-brown or brown dotted when dry</td>
</tr>
</tbody>
</table>
when dry, glabrous; seeds 2.3 x 1.8-2.5 mm, almost subglobose, sometimes flattened laterally, reddish-brown to brown. Flowering time, September-October; Leaves and fruiting time: March-May.

Similar species: *C. inundatum* was described as a new species from between Gencek and Aydinkent (İbradı) by Karin Persson in 1999. It is in the “endangered (EN)” category in Ekim et al. (2000). However, according to the new IUCN Red List Category, this species should be classified as “critically endangered (CR)” (Criterion B1 and B2), because it is known from only the type locality and the estimated “area of occupancy” is less than 10 km² (IUCN, 2001). This species is an Irano-Turanian element according to the Flora of Turkey vol.11 (Persson, 2000), but it should be evaluated as an East Mediterranean element according to the distribution area and habitat features.

This species is related to *C. persicum* Baker, and so differences between these species are shown in Table 19.

**Habitat:** Moist meadows, around the dry lake bed (periodically waterlogged area).

**Altitudinal range:** 1200-1300 m.

**Turkey distribution:** South Anatolia. Endemic (CR).

**Phytogeographical status:** East Mediterranean element.

**Flora of Turkey records:** Known only from the type locality.

**Specimens examined:** C3 Konya/Antalya: İbradı to Gencek, 34-35 km, around the dry lake bed (periodically waterlogged area), moist meadows, 1100 m, 29.ix.2002, O.D. Düflen (2565), S. Düflen, K.Çetinkaya (AKDU) - İbradı to Gencek, 34-35 km, around the dry lake bed (periodically waterlogged), moist meadows,

<table>
<thead>
<tr>
<th>Morphological characters</th>
<th><em>C. inundatum</em></th>
<th><em>C. persicum</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves</td>
<td>oblong-lanceolate</td>
<td>linear or linear-lanceolate to lanceolate, more rarely oblong</td>
</tr>
<tr>
<td>Flowers</td>
<td>funnel-shaped to narrowly campanulate</td>
<td>only widely funnel-shaped</td>
</tr>
<tr>
<td>Filament channels</td>
<td>puberulous to pubescent</td>
<td>glabrous</td>
</tr>
<tr>
<td>Filaments</td>
<td>completely white or yellowish-white with swollen brownish-yellow or dark yellow base</td>
<td>often wholly or in upper part tinged with purplish slightly swollen yellowish base</td>
</tr>
<tr>
<td>Styles</td>
<td>curved at apex</td>
<td>straight or slightly hooked</td>
</tr>
</tbody>
</table>
20. *Colchicum polyphyllum* Boiss. & Heldr. in Boiss., Diagn. ser. 2, 4: 121 (1859). (Figure 20).

Lectotypus: Turkey C5 İçel: Mersina, aux bords de la mer, 30.iX.1855, Reinert 3024 (G-BOIS) selected by K. Persson in Israel J. Bot. 41: 75–86 (1993).


= *C. decaisnei* var. *cilicica* Siehe in sched. ad Fl. Orient No. 88, nom. nud.


**Description:** Corm 1.5-4 (-4.5) x 1-3.5 (-4) cm, narrowly ovoid to globose; tunics membranous, caducous, light brown to reddish-brown or blackish-brown; neck absent, if present 1-2 x 0.3-0.8 cm. Cataphyll 3-15 x 0.2-1 (-1.2) cm, white or yellowish-white. Leaves hysteranthous, (6-) 10-25, spreading to procumbent, 10-30 (-32) x 0.2-0.8 (-1.1) cm at maturity, linear, obtuse to retuse, flat, glabrous or scabrous on margins. Flowers 2-25 (-30), funnel-shaped; perianth tube exceeding the cataphyll by 1-12 cm, white, cream or yellowish-white; segments 1.5-5 (-6) x 0.15-1.2 cm, linear to oblong or oblanceolate, each segment 7-15 veins, light pink to purplish-pink, not tessellated, acute to obtuse, without auricles at base, filament channels sparsely papillose to shortly pubescent. Stamens 1/2 to 1/3 of perianth limb in length; filaments 4-10 (-12) mm, white or cream, sometimes lilac in upper part, with swollen yellow base, glabrous; anthers 3-8 (-10) x 0.8-1.2 mm, yellow, with membranous margin. Styles thickened and slightly curved at apex, stigmas punctiform or decurrent for 1 mm. Capsule 1.5-3.5 x 0.6-1.2 cm, elliptic to oblong, apiculate to rostrate, yellowish-brown or dark brown dotted when dry, glabrous; seeds 1.5-3.5 (-4) mm diam., ovoid to subglobose, sometimes flattened laterally, reddish-brown to brown. Flowering time, October–November; Leaves and fruiting time: March-May.

**Similar species:** *C. polyphyllum* or material that should be assigned to this species is ignored by Brickell in Flora of Turkey. It is described by Baytop and Mathew under “Colchicum sp.”, although judging from their specifications of habitat and distribution their description may possibly be based on a mixture of this species and *C. persicum* (Persson, 1992). It was described as a new record from İçel by Karin Persson in 1992. In addition to Turkey, this species is also distributed in North Syria. *C. polyphyllum* is similar to *C. hierosolymitanum* Feinbr., and so differences between these species are shown in Table 20.

**Habitat:** Clearings of *Quercus coccifera* scrub, moist terra rossa, edges of field.

**Altimetrical range:** 20-1500 m.

**Turkey distribution:** South and South-East Anatolia.

**World distribution:** North Syria.
Phytogeographical status: East Mediterranean element.


Discussion

At the end of the study, about 700 specimens belonging to the genus Colchicum L. had been collected from the Mediterranean region in Turkey between 2000 and 2004 and studied in terms of morphological features. The research area is located entirely in the Mediterranean region. Therefore, about 80% of the Colchicum species (16 species) are Mediterranean elements, while the other 20% (4 species) are Irano-Turanian elements. Eight species are endemic to Turkey. The rate of endemism in the research area is 40% (8 species). This rate is similar to Turkey’s endemism rate
for this genus. The recommended IUCN threat category for these species can be listed as follows: CR - Critically Endangered 1, EN - Endangered 5, and LC - Least Concern 2 (IUCN, 2001).

New features were determined that had previously not been given in descriptions of *Colchicum* species in the Flora of Turkey, such as cataphyll measurements, numbers of veins on perianth segments, and seed features. In addition, useful identification keys (for both flowering material and leafing-fruiting material) were prepared for all *Colchicum* species in the Mediterranean region.

This study revealed some important findings such as the fact that *C. inundatum* should be classified as "critically endangered (CR)" (not endangered (EN)) according to the new IUCN Red List Category, that it should be evaluated as an East Mediterranean element (not an Irano-Turanian element) according to the distribution area and habitat features, and that *C. balansae* is not an endemic species for Turkey.

Acknowledgements

We would like to thank Prof. Dr. Orhan Küçüker, Prof. Dr. Nurhayat Sütlüpınar, Dr. Karin Persson, Dr. Mehtap Öztekin, and Research Assistant Ece Sevgi for providing references. Also we thank the members of editorial board and referees of Turkish Journal of Botany for constructive comments on earlier versions of this manuscript. This study was funded by Akdeniz University Research Foundation (Project Number 20.02.0121.03).

References


