

A new species of *Polygonatum* (Liliaceae) from Korea: *P. infundiflorum*

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A new species of *Polygonatum* (Liliaceae), *P. infundiflorum* Y. S. Kim, B. U. Oh & C. G. Jang was described from Is. Pungdo, Kyōnggi-do located in the central part of Korea. This species belongs to the series *Polygonatum* and is similar to *P. odoratum* var. *pluriflorum* and *P. thunbergii*. This species, however, is distinguished from the two latter species by the characteristics in the stem type, the absence of papillae on midvein of abaxial surface and margin of leaf, the colors and shapes of the perianth, the shape of filaments, the distribution patterns of papillae and trichomes on the surface of filament, the ratio of anther length to filament, and the length of pedicel. A key to *P. odoratum* var. *pluriflorum*, *P. thunbergii*, *P. grandicaule* including the new species in Korea is provided.

Key words: *Polygonatum*, series *Polygonatum*, new species, *P. infundiflorum*

The genus *Polygonatum* was divided into the three sections by its phyllotaxis (Baker, 1875). The section *Polygonatum* is classified into series *Polygonatum* (series *Alternifolia*), series *Bracteata*, and series *Altelobata* depending on its basic chromosome numbers (Abramova, 1975; Tamura, 1993), the presence of bract, existence of papillae on leaf abaxial surface, and distribution patterns of papillae on the surface of filaments (Tang, 1978; Jeffrey, 1982). The series *Polygonatum* is characterized by some characters such as alternate leaf arrangement, large perianth, the basic chromosome numbers of $x=9, 10$ (Komarov, 1935; Tang, 1978; Jeffrey, 1980; Abramova, 1975; Tamura, 1993). The

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taxon collected from Is. Pungdo is similar to *P. thunbergii*, *P. grandicaule* and *P. odoratum* var. *pluriflorum* in appearance, but differs from the latter two species in its stem type, the presence of papillae on midvein of leaf abaxial surface and margin, colors and shapes of the perianth, distribution patterns of papillae and trichomes on the surface of filaments, and the length of pedicel (Table 1). Therefore, this taxon is regarded as a new species, *P. infundiflorum* Y. S. Kim, B. U. Oh & C. G. Jang, which belongs to the series *Polygonatum* in absence of bract and having the basic chromosome numbers of $x=9$ (Fig. 2).

***Polygonatum infundiflorum* Y. S. Kim, B. U. Oh & C. G. Jang sp. nov. (Fig. 1)**

Rhizoma repens 7.5mm crassum. Caulis teres, erectus ad supra partis nutans,

Table 1. The difference of *P. thunbergii*, *P. grandicaule* and *P. infundiflorum*.

Characters	<i>P. thunbergii</i>	<i>P. grandicaule</i>	<i>P. infundiflorum</i>
Habitat	semi-sunny	sunny	sunny
Stem type	ascending at central part of stem	erect	erecting and descending at upper part of stem
Leaf midvein of abaxial surface	papillose	papillose	glabrous
Leaf margin	papillose	papillose	glabrous
Petiole	petiolate	petiolate	sessile
Perianth shape	funnel-shaped (narrow at lower part)	tubular	funnel-shaped (narrow at lower part)
Perianth color	white	white	pale yellow
Filament length	1.5-2.6cm	1.5-2.4cm	0.4-1.4cm
The ratio anther length to filament	0.9-1.6	0.9-1.7	1.8-3.2
Filament shape	cylindroid	cylindroid	cylindric
Filament posture	slightly S-shaped	slightly S-shaped	straight
Papillae on filament surface	a few (2.1ea/mm ²)	many(11.3ea/mm ²)	many (16.5ea/mm ²)
Trichome on filament surface	glabrous	glabrous	a few (0.63ea/mm ²)
Pedicel length	11-22cm	4-11cm	6-10cm



Fig. 1. *P. infundiflorum* (B. Oh et al. 96001). 1; Habit, 2; rhizome, 3; pedicel and perianth, 4; longitudinal section of perianth, 5; filaments, 6; enlargement of filament surface, 7; ovary and ovule arrangement, 8;berry.

51-74 cm altus; Folia 10-15, alterna oblongo-lanceolata 11.2-14.5cm longa, 3.4-6.6cm lata, apice acuta ad basi late sessilem attenuata, subtus vena et marginalis glabris; Inflorescentia axillaris 2-4 flora; Perianthium infundibularis, flavescens; Filamentis strictus, affixis ad perianthium supra, valde papillatus et paullulus multicellularis trichoma; Antherae dorsi affixae sagittatae, 2.9 mm longae; Ovarium ellipsoideum vel obovato-ellipsoideum 2.5-4.2 mm latum; Stylus filiformis albus glaber 6.5mm longus; Stigma capitellato subtriquetro. Proximum ad *P. thunbergii* et *P. odoratum* var. *pluriflorum* sed ab eo differt caulis teres erectus ad supra partis nutans, folia subtus vena et marginalis glabris, perianthium infundibularis flavescens, filamentis strictus affixis ad perianthium supra valde papillatus et paullulus multicellularis trichoma.

Type : Korea. Prov. Kyönggi-do: Ahansan-shi, Is. Pungdo, 36°54' N, 126°22' E, 11 May 1996, *B. Oh et al.* 96001 (holotype, CBU [Chungbuk National University]; isotype, KUS)

Korean Name : Nüt-tung-kul-rae (늪둥굴레)

Rhizome stout, horizontally creeping, 7.5mm thick; stem terete, erecting and descending at distal part, 51-74cm tall; leaves 10-15, alternate, 11.2-14.5 × 3.4-6.6cm, midvein of abaxial surface and margin smooth, apex acute, base attenuate, sessile; infloescens axillary 2-4 flowers; perianth funnel-shaped, narrow at middle part, pale yellow, inner lobe of apex rounded; filament 0.4-1.4cm long, straight, adnate to perianth tube at upper part, many papillae and a few multicellular trichomes on the surface; anther sagittate, attached to filament at dorsal surface, the ratio of anther to filament 1.8-3.2; ovary ellipsoid or obovate-ellipsoid, 2.5-4.2mm width; style filiform, white, glabrous, 6.5mm long; stigma capitate, shorter the anther; pedicel 6-10cm long.

Fig. 2. Photomicrographs of the somatic chromosomes in *Polygonatum*.
1; *P. infundiflorum*, 2; *P. thunbergii*, 3; *P. odoratum* var. *pluriflorum*.

P. infundiflorum was found only in the type locality, in which the population composed of 20-30 individuals. A new species is distinguished by the following diagnostic characters from its related species.

Key to the three species of *Polygonatum*

1. Stem angulate; basic chromosome numbers $x=10$*P. odoratum* var. *pluriflorum*
1. Stem terete; basic chromosome numbers $x=9$.
 2. Stem erect wholly, leafy part of stem 41-45cm long; leaf 16-20 x 5-7cm; pedicel 3.8-10.8mm long; perianth white, tubular, inner lobe emarginate form; filament inserted the middle of the perianth tube.*P. grandicaule*
 2. Stem ascending or erecting and descending at distal part, leafy part of stem 20-47cm long; leaf 11-17 x 3-5.5cm; pedicel (6-)8-21mm long; perianth infundiform yellow or yellowish white, inner lobe rounded; filament inserted the middle of the perianth tube.
 3. Stem erecting and descending at distal part; leaves midvein of abaxial surface and margin smooth; filament 0.4-1.4cm long, straight, many papillae and a few multicellular trichomes on surface, the ratio of anther length to filament 1.8-3.2.*P. infundiflorum*
 3. Stem ascending at middle part; leaves midvein of abaxial surface and margin papillose; filament 1.5-2.6cm long, slightly S-shaped, a few papillae on upper part of surface, the ratio of anther length to filament 0.9-1.6.*P. thunbergii*

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동굴레속(백합과)의 1신종 : 늦동굴레

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적 요

한국의 중부지방, 안산시 풍도에서 발견된 동굴레속(백합과)의 1신종, 늦동굴레(*P. infundiflorum* Y. S. Kim, B. U. Oh & C. G. Jang)를 신종으로 기재하였다. 늦동굴레는 동굴레절에 속하며 줄기의 직립여부, 잎뒷면의 털의 유무, 화피의 색과 모양, 수술대의 부착위치, 돌기의 분포양상, 길이, 소화경의 길이 등에 의해서 절내의 동굴레(*P. odoratum* var. *pluriflorum*) 및 산동굴레(*P. thunbergii*), 선동굴레(*P. grandicaule*)와 쉽게 구분되어 진다. 동굴레, 산동굴레, 선동굴레와 신종에 대한 검색표를 제시하였다.

주요어 : 동굴레속(백합과), 동굴레절, 신종, 늦동굴레

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