New taxa of the genus *Lycoris*

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상사화속(genus *Lycoris*)의 新分類群

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Abstract

Two new taxa of *Lycoris* (Amaryllidaceae) are reported from Korea. A new variety, *L. chinensis* var. *sinuolata* differs from *L. chinensis* in bulb shape, peduncle length, flower number, pedicel length and tepal-tube length. A new species, *L. chejuensis* is strikingly different from other species in flowering period and red color along the midrib of yellowish white color of flower. This new species is most closely related to *L. incarnata*, *Chinensis* species, but distinguished in peduncle length, and chromosome number and shape.

Lycoris, a small genus of Amaryllidaceae, consists of about twenty species worldwide and is distributed only in moist warm temperate woodlands of eastern Asia (Melchior, 1964; Stebbins, 1971; Kurita, 1987). Five taxa have been known to be distributed in Korea (Lee, 1980; Kim and Lee, 1991).

During the course of comparison of characteristics and original description of *L. aurea* Herb. and *L. chinensis* Spreng with those of *Lycoris* taxa collected from Mt. Naejang, a new variety *L. chinensis* var. *sinuolata* was recognized. In addition, a new species *L. chejuensis* was collected and described from Andouk Valley, Cheju Prov. (Quelpart Isl.).

1. *Lycoris chinensis* var. *sinuolata* K. Tae et S. Ko, var. nov. (Fig. 1)

L. aurea auct. non Herb.: Chung *et al.*, Nom. Pl. Kor. 35(1937); Park, Enum. Kor. Pl. 330(1949); Chung, Kor. Fl. II. 984(1957); Chung, Ill. Enc. Faun. Fl. 5: 1532(1965); Yang, J. Kor. 223(1976); Tae *et al.*, Kor. J. Pl. Tax. 3: 137(1987).

L. chinensis auct. non Traub: Kim and Lee, Kor. J. Pl. Tax. 2: 126(1991).

Description: Bulbs ovate with long neck. Leaves glabrous appearing in late February. Scape erect, in late July-early August, 40-70cm tall, somewhat flattened. Spathe-valves 2, lanceolate, 3-4cm. Umbel 4-7 flowered. Pedicels 2.2-4cm long. Flower deep yellow. Tepaltube 1.1-1.5cm. long. Tepalsegs oblanceolate, undulated on the margins and reflexed. Seed length 9.1-10.3mm, black.

Korean name: JIN-NO-RANG-SANG-SA-HWA(Kim and Lee, 1991), 개상사화(Lee, 1976)

Distribution: Korea (Mt. Naejang)

Holotype: K. H. Tae. Aug. 1, 1993. Herbarium of Hannam University(HNU), 017452, Mt. Naejang.

Examined specimens: Chôllabuk-do(Mt. Naejang)-1965. 8. 16: Lee, T. B., Park, J. D., Cho, M. Y. (SNUA); 1993. 8. 1. Tae, K. H. (HNU)

Kyöngsangnam-do(Tam-yang)-1970. 8. 9. Lee, T. B. (SNUA)

This new variety, *L. chinensis* var. *sinuolata*, so far known as *L. aurea* was recognized as *L. chinensis* which is known to be distributed in China by Kim and Lee (1991). However, *L. chinensis* var. *sinuolata* is distinctively different from *L. aurea* in pedicel length, tepal-tube length, flowering period, leaf growing duration, chromosome number and karyotype. Although this new variety shares some common characteristics with *L. chinensis* including the basic characters, floral color, flowering period, margin of perianth and chromosome number, it differs in bulb shape, peduncle length, bract length, tepal-tube length and karyotype (Fig. 1; Table 1).

2. *Lycoris chejuensis* K. Tae et S. Ko, sp. nov. (Fig. 2)

L. albiflora auct. non Koidz.: Nakai, Bull. Nat. Sci. Mus. Tokyo 31: 148 (1952); Makino, Makino's Ill. Fl. Col. 971(1983); Satake, Ohwi, Kitamura, Watari and Tominari. Wild Fl. Jap. Monocot. [1] 51(1988).

L. aurea auct. non Herb.: Lee, D. B. 1957. Fl. of Cheju.

Bulbi globosi con brevi collo. Folia linearia, color viridis, 49-55cm longa, 1.6-2.4cm lata. Scapus producit in mense Augusto 50-60cm longus. Bracteae 2 lanceolatae. Umbella 5-8 flores. Pedicelli 1.3-3.7cm longi. Perigonio albus-sufflavus et sanguineus secundum florem medium segmenti. Ovarium usque ad 5-8mm longum, 4.5-7.0cm diametrum. Tepalatus 1.7-2.2mm longus.

Figure 1. *Lycoris chinensis* var. *sinuolata* K. Tae et S. Ko.
A; Flowers, B; Pedicel, C; Bulb

Table 1. Comparison of some key characters among *L. aurea*, *L. chinensis* and *L. chinensis* var. *sinuolata*

Taxa	<i>L. aurea</i>	<i>L. chinensis</i>	<i>L. chinensis</i> var. <i>sinuolata</i> (Present study)
Characters			
1. Morphology			
Bulb shape	long neck	short neck	long neck
Peduncle length	60 cm	21 cm	40-70 cm
Bract length	3-5 cm	-2.5 cm	3-4 cm
Flower color	deep yellow	deep yellow	deep yellow
Flower number	5-10	4-5	4-7
Perianth margin	undulate	undulate	undulate
Pedicel length	0.8-1.5 cm	1.1-2.4 cm	2.2-4 cm
Tepal-tube length	1.5-2.0 cm	1.75 cm	1.12-1.50 cm
Flowering period	Sep.-Oct.	late July-Aug.	late July-Aug.
Leaf growing duration	Oct.-May	Feb.-May	Feb.-May
2. Cytology			
Chromosome number(2n)	12, 13, 14	16	16
Karyotype	10V+2R, 9V+4R 8V+6R	6V+9R+1v 6V+8R+2v	6V+10R

1. *L. aurea*: Ohwi (1984) and Caldwell (1962), *L. chinensis*: Traub (1958)

2. *L. aurea*: Bose (1958a), *L. chinensis*: Bose (1966)

Holotype: K. Tae. Aug. 30, 1992. Herbarium of Hannam University (HNU), 017467, Anduk Valley, Che-ju Prov. (Quelpart Isl.).

Description: Bulbs globose with short neck. Leaves linear, green, 49-55cm. long 1.6-2.4cm wide. Scape appearing in August, 50-60cm tall. Spathe-valves 2, lanceolate. Umbel 5-8 flowered. Pedicels 1.3-3.7cm long. Perigone yellowish white and red lines along the midribs of segments. Ovary up to 5-8mm long, 4.5-7mm in diam. Tepaltube 1.7-2.2cm long.

Korean name: CHE-JU-SANG-SA-HWA

Distribution: Korea (Cheju Prov., Quelpart Isl.)

Examined specimens: Cheju Prov.(Tae, K. H., 1993. 8. 13, 017468, 017469. Hannam University)

L. albiflora has been known to be distributed in Che-ju Prov. based on the specimen labelled as *L. albiflora*, collected from Che-ju Prov. by Taquet and Faurie and preserved in the Herbarium

Figure 2. *Lycoris chejuensis* K. Tae et S. Ko.
A; Flowers, B; Pedicel, C; Bulb

Table 2. Comparison of some key characters among *L. albiflora*, *L. flavescens* and *L. incarnata*, *L. chejuensis*

Taxa	<i>L. albiflora</i>	<i>L. flavescens</i>	<i>L. incarnata</i>	<i>L. chejuensis</i> (Present study)
Characters				
1. Morphology				
Bulb shap	long neck	long neck	short neck	
Flowering time	Sep.-Nov	mid Aug.	late July-mid Aug.	Aug.
Peduncle length	25cm	40-60cm	46-51cm	54-60cm
Flower color	white	pale yellow (redish tints at the margin)	white color (pinkish purple lines along the midribs)	yellowish white (redish tints at the midrib)
2. Cytology				
Chromosome number (2n)	16, 17, 18	19	29+1B (4V+25R+1B)	30 (3V+27R)

1. *L. albiflora*: Koidzumi (1924), *L. flavescens*: Kim and Lee (1991), *L. incarnata*: Caldwell (1962)

2. *L. albiflora*: Inariyama (1931), *L. flavescens*: Park *et al.* (1989), *L. incarnata*: Bose (1958 b)

of Tokyo University (Nakai, 1930, 1952; Park, 1949; Lee, 1980; Makino, 1983; Satake *et al.*, 1988). But Kim and Lee (1991) reexamined this specimen and identified as *L. flavescens* which was described as a new species from Naesosa, Chŏnbuk by the same authors. They argued against the possibility of the distribution of the species within Cheju Prov. based on the comparison of the characteristics of *L. albiflora* with those of above specimen.

In Anduk Valley, Cheju Prov. we could collect some individuals which are very different from *L. albiflora*, *L. flavescens* and *L. incarnata* in morphology and chromosomal character (Table 2, Plate 1, Fig. 2). This new species *L. chejuensis* blooms in August and its floral color is yellowish white with red tinge along the midrib of perianths. Individuals growing in the sun have more red flower than those in the shade. Its chromosomal number was $2n=30$, and its karyotype was $3V+27R$ (Plate 1). Therefore, it could be recognized as a new species, *L. chejuensis* based on the above-mentioned characteristics. *L. incarnata*, which is morphologically similar to *L. chejuensis* (Table 2), is distributed not in Korea but in southern China.

적 요

상사화속에 속하는 2 신분류군이 한국에서 채집, 보고되었다. *L. chejuensis* var. *sinuolata* (진노랑상사화)는 *L. chejuensis*와 외부형태적으로 볼때 구근형태, 화경길이, 포길이, 꽃수, 소화

경길이가, 그리고 화통길이에 있어 큰 차이를 보여 신변종으로 기재하였다. 또한 제주도에서 채집한 *L. chejuensis* (제주상사화)는 꽃이 8월에 개화하고 황미백색으로 화피의 중륵에 붉은선이 있어 다른 종들과 뚜렷히 구별되고, 특히 중국에 분포하고 외부형태적으로 유사한 *L. incarnata*와는 화경길이, 염색체 수와 핵형에 있어 서로 차이를 보여 신종으로 명명하였다.

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PLATE 1

Plate 1. Photomicrographs of the somatic chromosome and karyotype (*L. chejuensis*).