

Saussurea grandicapitula W. Lee et H. T. Im (Compositae), a New Species from the Taebaek Mountains, Korea

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Saussurea grandicapitulata, a new species of *Saussurea*, was reported in the Taebaek Mountains. It has peculiar morphological characters, easily distinguishable from other *Saussurea* in Korea and Japan; robust plant size, pale green leaf beneath, purplish brown-cobwebby hairs on petioles of radical and lower cauline leaves, few heads with not so long pedicel, big globose involucre with brown-cobwebby hairs, and often recurved long phyllaries. *S. grandicapitula* is an endemic species to Korea which was differentiated in consequence of adaptation to heavy snowy environment of the Taebaek Mountains.

Key words: Compositae, endemic, new species, *Saussurea grandicapitulata*, Taebaek Mountains

Saussurea DC. (Compositae) consists of about 380 species (Lipschitz, 1979) and is widely distributed throughout the northern hemisphere, occurring mainly at high altitudes in Asia. This genus is well diversified in Korea where 32 species have been recognized by Lipschitz (1979), and 16 species have been reported as endemic species (Oh *et al.*, 2005). It was already indicated by Kitamura (1935) that there were abundant species of *Saussurea* in Korea considering Korean flora. Recently, in the course of studies on the flora of the Taebaek Mountains, we founded new species of *Saussurea* endemic to Korea.

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***Saussurea grandicapitula* W. Lee et H.T. Im, sp. nov. (Fig. 1)**

Rhizoma obliquum radices filiformes numerosas emittens. Caulis erectus 70-100 cm altus apices et basin versus dense purpureo-brunneo-crispatus. Folia radicalia sub anthesi emarcida, caulina inferiora ampla longe petiolata, petiolis 5-12 cm longis purpureo-brunneo-arachnoideo-lanatus, lamina cordata apice breviter caudato-acuminata basi cordata 12-20 cm longa 10-15 cm lata margine dentata, supra viridia minute puberula subtus pallida secus nervos et venas subarachnoideo-lanatus. Capitula pauca 2-3, pedunculis 15-20 mm longis dense brunneo-puberulis. Involucrum globosum circum 13-16 mm longum et latum in sicco basi rotundatum, squamme 5-6 seriales dorso brunneo-arachnoideo-lanatus, exteriores ovato-lanceolatae ad basim 3-4 mm latae, interiores oblongo-lineares apice acuminate. Corolla purpurascens 14-16 mm longa, pars angusta tubi 6-7 mm longa, pars cetera 8-9 mm longa. Pappus brunnescens, biserialis, setis exterioribus numerosis abbreviatis deciduis scabris, interioribus plumosis 9-10 mm longus.

Holotypus: Korea, Gangwon-do, Injae-gun, Buk-myeon, Hangaeryeong (ridge, 1,004m) - Daecheong-bong (peak, 1,708m), 1992. 8. 14. W.T. Lee, 920801. (CNU).

Rhizome obliquely prostrating with many fibrous rootlets; stems 70-100 cm long, densely purplish brown-crisped hairs on upper and lower part; purplish brown-cobwebby hairs on petioles of radical and lower cauline leaves; radical leaves wither away before blooming, lower cauline leaves broadly or narrowly cordate, shortly caudate or acuminate, cordate at base, 12-20 cm long, 10-15 cm wide, dentately toothed, puberulent above, hairy along the nerves beneath, pale green beneath, upper leaves gradually reduced, broadly ovate to lanceolate; heads in groups of 2-3, 15-20 mm long pedicelled; involucre globose, about 13-16 mm high and wide; pyllaries 5-6 seriate, brown-cobwebby, the outer ovate-lanceolate, 3-4 mm wide at base, as long as the median ones, often recurved, the inner oblong-linear, acuminate; corolla purplish, about 14-16 mm long (wide part 6-7 mm long, narrow part 8-9 mm long); pappus brownish, 2 seriates, the short outer removed easily, the inner feathery, 9-10 mm long.

Flowering Aug. to Sept.

Korean name; Tae-baek-chui

Distribution; The Taebaek Mountains, Korea.

Specimens examined; Gangwon-do, Injae-gun, Buk-myeon, Hangaeryeong (ridge, 1,004m) - Daecheong-bong (peak, 1,708m), 1992. 8. 15. W.T. Lee, s.n. (CNU); Gangwon-do, Donghae-si, Samhwa-dong, Mureung-gaegok (valley) - Duta-san (Mt. 1,353m), 1991. 6. 28. W.T. Lee, s.n. (CNU).

The external characteristic traits of *S. grandicapitula* is robust plant size, pale green

Table 1. Specific characteristics of some *Saussurea* having similar morphology with *S. grandicapitulata*.

	hairs on leaf beneath	involucral width	hairs on involucre	phyllaries	number of heads	distribution
<i>S. grandicapitulata</i>	hairy along nerves	13-16 mm	brown cobwebby	ovate-lanceolate in 5-6 series	2-3 with short pedicel	Taeback Mountains
<i>S. diamantica</i>	dense white hairs	12-18 mm	white, not cobwebby	oval in 5-6 series	1-2 with long pedicel	Gangwon-do, N. Korea
<i>S. eriophylla</i>	dense white hairs	18-25 mm	white, not cobwebby	oval in 8 series	1-3 with long pedicel	mountain regions of N. Korea
<i>S. triangulata</i>	sparsely beneath	5-6 mm	brown cobwebby	orbicular in 4-5 series	several with short pedicel	Baekdusan, Manchuria, Siberia
<i>S. franchetii</i>	hairy along nerves	13 mm	brown cobwebby	(narrowly) oblong in 5 series	5-8 with long pedicel	Japan (north Honshu)
<i>S. brachycephalla</i>	brown puberulent	16 mm	dense white, not cobwebby	ovate-lanceolate in 5 series	3-7 with long pedicel	Japan (north Honshu)
<i>S. nikoensis</i>	brown puberulent	13-15 mm	dense white, not cobwebby	ovate-lanceolate in 5 series	2-8 with long pedicel	Japan (central Honshu)

leaf beneath, purplish brown-cobwebby hairs on petioles of radical and lower cauline leaves, few heads with not so long pedicel, big globose involucre with brown-cobwebby hairs, and often recurved long phyllaries. Involucre and phyllaries are regarded as important characteristics for classification of *Saussurea* (Im, 1989). *S. diamantica* Nakai and *S. eriophylla* Nakai, also endemic to Korea, resemble *S. grandicapitula* in having big and hairy involucre, but they have dense white hairs at least on leaf beneath. The former is distributed mainly in the Taebaek Mountains and mountainous region of North Korea, and the latter restrictly in mountainous region of North Korea. *S. triangulata* Trautv. et Meyer, which is distributed mainly in Baekdu-san (Mt.), Manchuria, and Siberia, also resemble *S. grandicapitula* in having involucre with brown-cobwebby hairs, but it has long pedicel, winged petiole, and cylindrical involucre.

Genus *Saussurea* is well diversified also in Japan where 25 species were recognized by Iwatsuki *et al.* (1995). Among them, *S. pulchella* Fisch., *S. japonica* (Thunb.) DC., *S. gracilis* Maxim., *S. maximowiczii* Herder, and *S. ussuriensis* Maxim. are widely distributed in northeast Asia. Otherwise *S. tanakae* Fr. et Sav. is restrictly distributed both in Korea and Japan (Ohwi, 1965). Among endemic Japanese *Saussurea*, *S. franchetii* Koidz., *S. brachycephala* Franch., and *S. nikoensis* Fr. et Sav. resemble *S. grandicapitula* in having following morphological characteristics; robust plant size, few heads, and big globose or globose-campanulate involucre with hairs. Although *S. franchetii* also has brown-cobwebby hairs on involucre like *S. grandicapitula*, it has narrowly oblong phyllaries while those of *S. grandicapitula* are ovate-lanceolate. The involucre of *S. brachycephala* and *S. nikoensis* are covered with dense hairs too, but not cobwebby ones (Table 1).

Saussurea grandicapitula grows under deciduous forest which is mainly composed of *Quercus mongolica* Fisch., *Betula davurica* Pall., *B. chinensis* Maxim., *Carpinus cordata* Blume, *Acer pseudo-sieboldianum* (Paxton) Kom., *Tilia amurensis* Rupr., *Rhododendron schlippenbachii* Maxim. etc.. There are many other plants on the forest floor; *Cimicifuga simplex* Wormsk., *Salvia chanroenica* Nakai, *Ptheirospermum japonicum* (Thunb.) Kanitz, *Scabiosa tschiliensis* Gruning, *Paraseneio hastata* (L.) H. Koyama ssp. *orientalis* (Kitamura) H. Koyama, *Syneilesis palmata* (Thunb.) Maxim., *Ainsliaea acerifolia* Sch.-Bip., *Achilea sibirica* Ledeb., etc.. The vegetation which *S. grandicapitula* grows in is the typical one of deep mountainous region of Gangwon-do (Prefecture) where there are heavy snow during long winter. *S. grandicapitula* has recurved long involucre bracts with dense hairs, and this character is also seen in *S. diamantica*, *S. eriophylla*, *S. triangulata*, *S. franchetii*, *S. brachycephala*, and *S. nikoensis*. They all grow in heavy snow region, and the morphological similarity between them is considered as the result of

convergent adaptation to similar habitats (Im, 1990, 1991). In view of the result so far achieved, *S. grandicapitula* is an endemic species to Korea which was differentiated in consequence of adaptation to heavy snowy environment of the Taebaek Mountains.

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태백취, 취나물속의 일신종

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태백산맥에서 발견된 *Saussurea*속의 신식물을 태백취(*S. grandicapitula*)로 기재하였다. 우리나라 특산인 본 종은 크기가 70-100cm에 달하는 장대한 식물로, 앞 뒷면이 창백한 녹색이며, 적갈색의 엷한 털이 엽병에 나고, 수개의 두화가 짧은 화경에 달리며, 구형의 커다란 총포에는 갈색의 엷한 털이 밀생하고, 포편은 뒤로 젖혀지기도 하는 특징을 가져서, 한반도 북부나 일본의 다른 종들과는 명확히 구별된다. 이는 태백산맥의 눈 많은 환경에 적응 진화한 종으로 생각된다.

주요어: 국화과, 고유종, 신종, 태백산맥, 태백취, *Saussurea grandicapitulata*

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