J. Plant Biol. 40 (4) : 288-290 (1997)

Saussurea chabyoungsanica Im (Compositae), a New Species from Mt. Chabyoung-san, Korea

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A new species, the *Saussurea chabyoungsanica* Im, is described from Mt. Chabyoung-san, Kangwon Province, Korea. The new species has long elliptic leaves with short petioles and a compact corymb which consists of many slender tubular heads and tiny pedicels. These characteristics are not seen in any other *Sausurea species* in Korea, Japan, and northeast China (Manchuria). *Saussurea chabyoungsanica* is an endemic species of Korea.

Keywords: *Saussurea chabyoungsanica*, Compositae, new species, calciferous soil

The genus *Saussurea* DC. (Compositae) consists of about 380 species (Lipschitz, 1979) and is widely distributed throughout the Northern Hemisphere. It is found primarily in high altitudes in Asia. The genus is well diversified in Korea where 32 species have been recognized by Lipschitz (1979), of which 19 species have been reported as endemic species (Lee, 1982). It was indicated by Kitamura (1935) that the *Saussurea* are a more abundant genus when compared with other Korean flora. Recently, in a series of studies on the flora of Mt. Chabyoung-san, a new endemic species of *Saussurea* was found (Plate 1).

***Saussurea chabyoungsanica* Im, sp. nov (Fig. 1)**

Rhizoma obliquum radices filiformes numerosas emittens. Caulis erectus 50-75 cm altus pilis dense brunneus obsiti. Folia radicalia sub anthesi emarcida, caulina inferiora brevipetiolata, petiolis 1-2 cm longis, lamina cordata apice mucronata basi cordata vel auriculata 10-14 cm longa 1.5-2 cm lata margine dentata, supra viridia minute puberula subtus pallida secus nervos et venas dende puberula. Capitula 20-60 dnese corymbosim disposita, 3 mm lata in sico, pedunculis 1-2 mm longis dense brunneo-puberulis. Involucrum ylindricum circum 8-10 mm longum et latum 3 mm in sicco, squamme 6-7 seriales dorso brunneo-arachnoideo-lanatus, exteriores ovato-lanceolatae, interiores oblongo-lineares apice acuminate. Corolla purpurascens 8 mm longa, pars angusta tubi 4 mm longa, pars cetera 4 mm longa. Pappus brunnescens,

Plate 1. Type specimen of Saussurea chabyoungsanica Im.

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biserialis, setis exterioribus numerosis abbreviatis deciduis scabris, interioribus plumosis 6-7 mm longus.

Holotypus: Korea, Kangwon Province, Cheongseon-gun, Imge-myon, along the main ridge of Mt. Chabyoung-san, 24 September 1995. *Im, H.T. 35919* (Herb. Chonnam Univ.)

Stems 50-75 cm long, densely pubescent with brownish short hairs on all surfaces; brown hairs on leaf surface, especially on vein; radical leaves wither away before blooming, lower cauline leaves long elliptic, acuminate at apex, slightly auriculate, cordate or obtuse at base, 12-14 cm long, 1.5-2 cm wide, mucronate-toothed, puberulent above, hairy along nerves beneath, pale green beneath, upper leaves gradually reduced but almost same in shape; many heads in groups of 20-60, in compact corymbs, very short pedicelled, 1-2 mm long; involucres narrowly cylindrical, about 8-10 mm long, about 3 mm wide; bracts 6- or 7- seriate, usually recurved, brown-cobwebby, outer ones short, about 1/7-1/8 of inner ones in length, ovate-lanceolate or lanceolate, long acuminate, sometimes aristate; median ones long lanceolate; inner ones linear, acute; corolla purplish, about 8 mm long; pappus brownish, 2-seriates, short outer ones removed easily; inner ones feathery, 6-7 mm long. --- Aug.- Sept.

Korean name; Chabyoungchui

Distribution; Mt. Chabyoung-san, Korea.

Specimens examined; Korea, Kangwon Province: Cheongseon-gun, Imge-myon, from Route 42 to Mt. Chabyoung-san, 9 Sept. 1994. *Im 33334* (Herb. Chonnam Univ.); Cheongseon-gun, Imge-myon, along the main ridge of Mt. Chabyoung-san, 24 September 1995. *Im 35920, 35927* (Herb. Chonnam Univ.).

The external characteristic traits of *S. chabyoungsanica* include tiny brown hairs on the plant surface, pale green leaves beneath, and long lanceolate leaves which are slightly cordate or auriculate at the base. They have very short petiole, less than 1.5 cm long, and a compact corymb consisting of many heads, about 20-60 with tiny pedicel less than 2 mm long. They also have slender cylindric invoucres with browncobewebby hairs, and usually recurved long lanceolate bracts (Fig. 1).

There is no *Sausurea* with long elliptic leaves and short petiole and a compact corymb consisting of many slender tubular heads with tiny pedicels in Korea, Japan, Northeast China (Manchuria) (Kitamura, 1935, Ohwi, 1965, Lipschitz, 1979). The compactness of

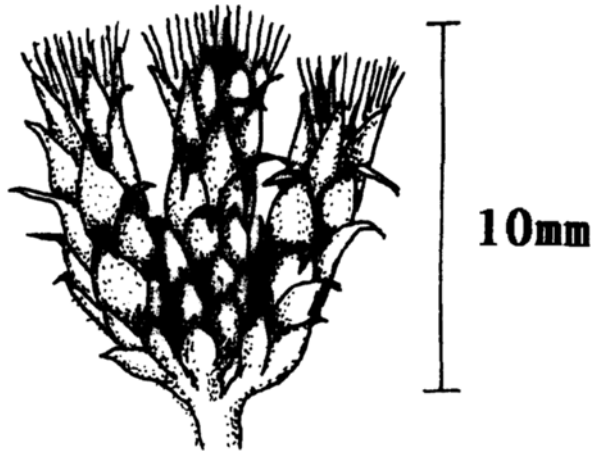

Fig. 1. Inflorescence of *Saussurea chabyoungsanica.*

Table 1. Morphological differences among *S. chabyoungsanica* and other morphologically related Saussurea species

	No. of involucre	width of involucre	leaf shape
S. chabyoungsanica	20-60	3 mm	long elliptic
S. chionophylla	5-11	10-12 mm	cordate
S. yanagisawae	4-8	11-12 mm	cordate

inflorescence can be used as a key to classifing the genus *Saussurea* (Im, 1989). The characteristics of a compact corymb are also seen in some other *Saussurea*, like *S. chionophylla* Takeda and *S. yanagisawae* Takeda (Shimizu, T., 1982). But they can be distinguished easily from *S. chabyoungsanica* in having other typical characters (Table 1). Also, they are mainly distributed in the alpine region of Hokkaido, Japan, and have cordate leaves and a broad involucre over 1 cm wide (Table 1).

Corolla characteristics can be used as a key to classifing the genus *Saussurea*. The average length of the limb of *S. maximowiczii* Herder and *S. triptera* Franch., which have the shortest limb among the *Saussurea* species studied so far, is about 5.5 mm. In addition *S. spinulifera* is the shortest one in the length of the broad part of corolla tube (1.2 mm) (Shimizu, 1978). The corolla of *S. chabyoungsanica* is the smallest in size among Korean and Japanese *Saussurea*, especially in the length of the limb (about 4. 2 mm) and the broad part of the corolla tube (1.1 mm) (Fig. 2).

Saussurea chabyoungsanica grows in a shrubbery zone on the north slope just under the peak of Mt. Chabyoung-san. The shrubbery zone is mainly composed of *Betula ermani* Cham., *Carpinus cordata* Bl., *Tilia amurensis* Rupr., *Abelia koreana* Nakai, *For-*

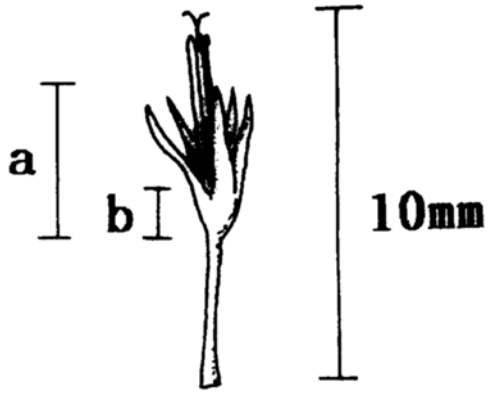

Fig. 2. The corolla of *S. chabyoungsanica.*

sythia saxatilis Nakai, *Exochorda serratifolia* S. Moore, *Rhamnus parviflora* Bunge, and *Rhododendron schlippenbachii* Max.. In this zone where strong, cold wind blows ceaselessly from Bulgunchabyoungi-gol Valley, even tall trees like *B. ermani, C. cordata*, and *T. amurensis* grow as dwarf trees less than 1.5 m high. There are many other plants on the forest floor; *Thymus quinquecostatus* Celak., *Patrinia rupestris* Juss., *Scabiosa mansenensis* Nakai, *Chrysanthemum zawadskii* Herbich var. *alpinium* Kitamura, and *Gypsophila pacifica* Kom.

The vegetation of the shrubbery zone where *S. chabyoungsanica* grows is very peculiar in comparison with the same altitudinal regions in Kangwon province. The peculiarity comes from the characteristics of the bedrock. Mt. Chabyoung-san is in a famous limestone region, and the peak of the mountain is composed of an outcrop of limestone. There are many rare and endangered plants around the north slope just under the peak of Mt. Chabyoung-san; these include *Abelia koreana, Forsythia saxatilis, Exochorda serratifolia, Patrinia rupestris, Scabiosa mansenensis,* and *Gypsophila pacifica.* In view of the result so far achieved, *S. chabyoungsanica* is an endemic species to Korea. Inferentially their typical morphology may come from a consequence of its adaptation to its unique environment such as the strong winds and the calciferous soil of Mt. Chabyoungsan.

ACKNOWLEDGEMENTS

This study was supported in part by the Hanyang University research grant FY-95.

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Received July 18, 1997
Accepted November 2, 1997