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Short communication

Chromosome numbers of 50 vascular plants in South Korea

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ABSTRACT

Variation or constancy in the chromosome number within taxa of different categories have been proven to be important characters for taxonomic groupings. In order to expand the current knowledge on somatic chromosome numbers of South Korean vascular plants, chromosome counts were made for 50 species (38 genera of 17 families). The first chromosome information for *Glaux maritima* var. *obtusifolia* Fernald, *Hemerocallis hakuunensis* Nakai, *Hylotelephium verticillatum* (L.) H. Ohba, *Orostachys iwarengae* f. *magnus* Y.N. Lee, and *Teucrium viscidum* var. *miquelianum* (Maxim.) Hara is presented. New chromosome numbers compared with previous studies are also counted in *Aconitum pseudolaevae* Nakai, *Securinega suffruticosa* (Pall.) Rehder, and *Tricyrtis macropoda* Miq., respectively. In addition, *Eupatorium japonicum* Thunb. is proven to show polyploidy with tetra- and pentaploid. Among studied species, the diploids (66%) and tetraploids (24%) prevail.

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Introduction

Usually, all individuals within a species possess the same chromosome number (CN). However, plants with different CNs are not frequently found within the bounds of one taxonomic species (Friesen 1992). In angiosperms, the haploid chromosome number varies between $n = 2$ and $n = 132$, but the majority of them show a range between $n = 7$ and $n = 12$ (Sharma 2009). Variation or constancy in the CN within taxa of different categories have been proven to be important characters for taxonomic groupings (Sharma 2009). In order to expand the current knowledge on somatic CNs, we present results of a CN study of plant species from South Korea.

Materials and methods

Shoot tips were pretreated in 0.002M 8-hydroxyquinoline for 4–6 hours in total darkness at 4°C and then fixed in Carnoy's fluid (three parts absolute ethanol: one part glacial acetic acid, volume/volume) for 1 hour at room temperature 23°C. The shoot tips were macerated in 1M hydrochloric acid at 60°C for 10–15 seconds. After washing three to five times to eliminate residual hydrochloric acid

and staining with 1% aceto-orcein for 8 hours, the material was squashed for observation in 45% acetic acid. More than 10 chromosome micrographs were observed for each accession using an optical microscope (Olympus AX-70). Semipermanent microscope slides and photographs of representative cells have been retained in the plant taxonomy laboratory of the Changwon National University, South Korea. Voucher specimens are preserved in the Korea National Herbarium. The first chromosome data for the species are indicated by (*), and the new CNs are marked with (!). Previously published results (PCN) and basic CN (BCN) for the genus are also presented based on the references.

Results

Aizoaceae

1. *Tetragonia tetragonioides* (Pall.) Kuntze, $2n = 4x = 32$ (Figure 1A)

Voucher. Uljin-gun (Ugihang)-130602-001. [PCN]: $2n = 16$ (Dequan and Hartmann 2003), $2n = 32$ (Beuzenberg and Hair 1959). [BCN]: $x = 8$ (Darlington and Wylie 1945; Hsu 1968).

Asclepiadaceae

2. *Cynanchum paniculatum* (Bunge) Kitag. ex H. Hara, $2n = 2x = 22$

(Figure 1B)

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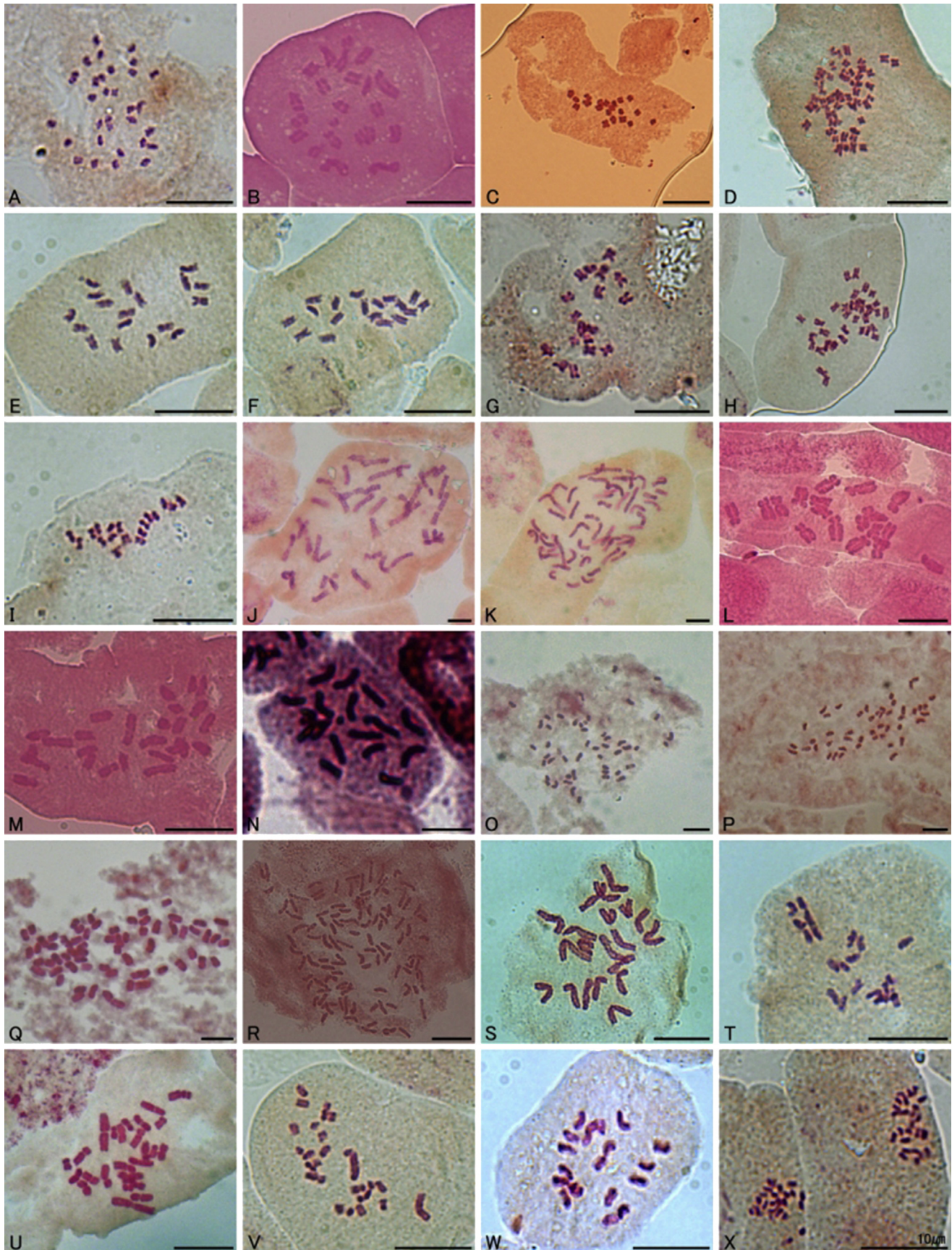


Figure 1. Mitotic metaphase chromosomes of vascular plants in South Korea: A, *Tetragonia tetragonoides* (Pall.) Kuntze; B, *Cynanchum paniculatum* (Bunge) Kitag; C, *Impatiens textori* Miq; D, *Chenopodium album* var. *centrorubrum* Makino; E, *C. ficifolium* Smith; F, *C. glaucum* L; G, *Salicornia europaea* L; H, *Salsola komarovii* Iljin; I, *Suaeda japonica* Makino; J, K, *Eupatorium japonicum* Thunb; L, *Lactuca indica* L; M, *Saussurea gracilis* Maxim; N, *Solidago virgaurea* subsp. *gigantea* (Nakai) Kitam; O, *Hylotelephium verticillatum* (L.) H. Ohba; P, *Orostachys iwawenge* f. *magnus* Y. N. Lee; Q, *Sedum latiovalifolium* Y. N. Lee; R, *Pteridium aquilinum* var. *latiusculum* (Desv.) Und. ex Heller; S, *Euphorbia ebracteolata* Hayata; T, *E. esula* L; U, *E. jolkini* Boiss; V, *E. pekinensis* Rupr; W, *E. sieboldiana* Morren & Decne; X, *Securinega suffruticosa* (Pall.) Rehder.

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