Taxonomic characters of *Megaleranthis saniculifolia* Ohwi (Ranunculaceae)

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모데미풀의 분류학의 形質

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Abstract

*Megaleranthis saniculifolia* Ohwi is a endemic plant of Korea which was described a new genus and new species at Mt. Chiri in 1935.

This study included karyotype, pollen morphology and epidermis of leaf and also the geographical distribution for the taxa of *Megaleranthis saniculifolia* Ohwi.

Introduction

*Megaleranthis saniculifolia* Ohwi belongs to Ranunculaceae and is endemic plants of Korea. This plant was collected by Ohwi at Unbon-Mudemi, Mt. Chiri in 1935 and discribed as a new genus and new species.

The monotypic taxa is similar to the genus *Trollius*, but is distinguished by the characters that the plant has no cauleine leaves but the involucre under the single flower. The sepal is five, petaloid, white and 1 cm long. The petal is five, flat, nectarous, yellow and 2mm long. Stamens and carpels are numerous. The fruit is follicle.

This study has carried out to illuminating the characters of the plant by the analysis of karyotype, epidermal patterns of leaf, and the pollen morphology, and also the geographical distributions.
Materials and methods

The living materials of this taxon were collected by the authors at Mt. Dukyu on 25 April, 1983, and cultivated at the green house of Ewha Womans University.

Herbarium specimens of the plants are used which are preserved in Kyoto University, Ewha Womans University and College of Agriculture, Seoul National University for the study of geographical distributions of this taxon.

The epidermal patterns of leaf and pollens are observed by LM and SEM according to the method by Hardin (1979). The pollens was acetolyzed by the modified method of Erdtman (1979). For the chromosome analysis the roots are pretreated in 0.02m hydroxyquinoline for 5 hours, and the karyotype was analyzed by Levan’s method (1964).

Result and discussion

The both leaf surfaces have wavy cell walls. The stomata are observed only on adaxial surface. The stoma size is $45.00 \pm 2.60 \times 34.56 \pm 2.22$ microns. The picles are scattered on the both leaf surfaces (Plate 1-1,2,3). The epidermal cells attached to the stomata are anomocytic (Plate 1-5).

The pollen is monad, prolate and tricolpate. The surface of pollen is streamline form (Plate 2) and the size is $36.35 \pm 1.89 \times 25.50 \pm 1.68$ microns.

The chromosome number of somatic cells is counted as sixteen, and it has one pair of satellite chromosome (Plate 2). The karyotype of chromosome is summarized in Table 1. The taxon

<table>
<thead>
<tr>
<th>Chromosome</th>
<th>Long arm length</th>
<th>Short arm length</th>
<th>Total length</th>
<th>Arm ratio</th>
<th>Position of centromere</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>average</td>
<td>variation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3.76 ± 1.91</td>
<td>1.98 ± 1.19</td>
<td>6.12 ± 2.64</td>
<td>4.15-7.59</td>
<td>2.06 ± 0.34</td>
</tr>
<tr>
<td>2</td>
<td>4.30 ± 2.06</td>
<td>1.54 ± 0.99</td>
<td>5.83 ± 2.73</td>
<td>3.91-7.05</td>
<td>2.81 ± 0.77</td>
</tr>
<tr>
<td>3</td>
<td>3.35 ± 1.16</td>
<td>2.03 ± 0.75</td>
<td>5.38 ± 1.81</td>
<td>3.87-6.39</td>
<td>1.61 ± 0.17</td>
</tr>
<tr>
<td>4</td>
<td>3.82 ± 1.74</td>
<td>1.45 ± 0.77</td>
<td>5.27 ± 1.88</td>
<td>3.85-6.28</td>
<td>2.80 ± 0.56</td>
</tr>
<tr>
<td>5</td>
<td>4.04 ± 1.41</td>
<td>1.15 ± 0.46</td>
<td>5.19 ± 1.65</td>
<td>3.75-5.93</td>
<td>3.54 ± 0.56</td>
</tr>
<tr>
<td>6</td>
<td>3.45 ± 1.42</td>
<td>1.25 ± 0.45</td>
<td>4.70 ± 0.45</td>
<td>3.48-5.70</td>
<td>2.81 ± 0.79</td>
</tr>
<tr>
<td>7</td>
<td>3.16 ± 1.16</td>
<td>1.15 ± 0.46</td>
<td>4.25 ± 1.41</td>
<td>3.12-4.73</td>
<td>2.81 ± 0.22</td>
</tr>
<tr>
<td>8</td>
<td>3.64 ± 1.27</td>
<td>1.25 ± 0.75</td>
<td>4.89 ± 1.70</td>
<td>3.75-5.70</td>
<td>2.92 ± 0.79</td>
</tr>
</tbody>
</table>

| Total per cell | 41.63 |

(0.39) ± 0.35

sm: submedium, M: medium, st: satellite, Unit: μm
of *Megaleranthis saniculifolia* Ohwi is reported by the several collectors from the Mts. Solhak (Lee and Yu 1984), Sobaek (1973, 6.4, Oh, S.Y., TI), Dukyu (1983, 4.25, Lee, Y.N. & Yeau, S.H., E.W.U), Chiri (1935, 6.15, J. Ohwi, TI 70851, Holotype) and Halla (1983, 4, Kim, M.H., Cheju Univ.) (Fig. 1).

Ohwi (1935) described that the leaf had no hair, but the prickle is scattered on the both leaf surfaces, especially much more on the margin. According to the characters of tricolpate pollen and large R-type chromosome (Kurita, 1961), this plant is considered to be a primitive taxon in Ranunculaceae. Farther study the closely related taxon *Eranthis* and *Trollius* is need for finding relationship among the taxa.

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**Literature**


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**要**

1935년 발표한 모데미 종 *Megaleranthis saniculifolia* 식물에 대한 핵형, 花粉形態, 花의 形質의 形質과 地理的인 分布를 밝혔다.
Plate 1. Epidermal patterns of leaf. (1) SEM Photographs of adaxial surface ($\times 500$). (2) SEM Photographs of abaxial surface($\times 500$). (3) Prickle ($\times 2000$), (4) Stoma ($\times 2000$), (5) Light micrographs of abaxial surface($\times 117$)
Plate 2. Pollen and chromosomes. (1) SEM photographs of pollen grain (× 2000), (2) SEM photographs of surface sculpture pattern (× 10000), (3) Somatic chromosomes (× 2780), st: satellite chromosome, (4) Karyotype of chromosomes (× 2780).