Fallopia koreana (Polygonaceae): A new species from Korea

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One new species of Fallopia sect. Pleuropterus (Polygonaceae) is described from the central part of Korea. Fallopia koreana B. Oh et J. Kim is easily distinguished from F. cilinervis and F. multiflora by its primarily branched spikes, few trichomes on peduncle, weakly developed perianth wings, twining stem to the left, projected stigma surface, and three broad wings twisted at fruit apex. A key to the three species of this section known from Korea is provided.

Keywords Polygonaceae, Fallopia sect. Pleuropterus, new species, F. koreana

The taxon Pleuropterus has been traditionally treated as a section of the genus Polygonum (Bentham and Hooker, 1880), or as a separate genus (Turczaninow, 1848). But, Haraldson (1978) classified twining perennial or annual herbaceous plants with enlarged perianth enclosing the achene into the genus Fallopia, which was typified with Polygonum scandens L. by Adanson (Adanson, 1763). In addition, Haraldson (1978) recognized three sections under this genus: sects. Fallopia, Pleuropterus, and Paragonum.

About 10 species of Fallopia are distributed in temperate regions of the Northern Hemisphere (Brandbyge, 1993), and about six species including F. koreana B. Oh et J. Kim are known from Korea. Among these, F. cilinervis (Nakai) Hammer, F. multiflora (Thunb.) Haraldson and F. koreana belong to the sect. Pleuropterus (Haraldson, 1978; Baik et al., 1986). Fallopia koreana is easily distinguished from F. cilinervis and F. multiflora by its primarily branched spikes, few trichomes on peduncle, weakly developed perianth wings, twining stem to the left, projected stigma surface, and three broad wings twisted at fruit apex (Table 1).

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Table 1. Qualitative and quantitative characters of *Fallopia* sect. *Pleuropterus* in Korea.

<table>
<thead>
<tr>
<th>Character</th>
<th><em>F. ciliinervis</em></th>
<th><em>F. multiflora</em></th>
<th><em>F. koreana</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflorescence</td>
<td>secondarily branched</td>
<td>secondarily branched</td>
<td>primarily branched</td>
</tr>
<tr>
<td>Peduncle trichome</td>
<td>many</td>
<td>many</td>
<td>few</td>
</tr>
<tr>
<td>Perianth wing</td>
<td>distinctly developed</td>
<td>distinctly developed</td>
<td>weakly developed</td>
</tr>
<tr>
<td>Root</td>
<td>thin</td>
<td>thickened</td>
<td>thickened</td>
</tr>
<tr>
<td>Stem color</td>
<td>red</td>
<td>green</td>
<td>green</td>
</tr>
<tr>
<td>Leaf shape</td>
<td>sagittate</td>
<td>cordate</td>
<td>cordate</td>
</tr>
<tr>
<td>Flower no./node</td>
<td>5, 6</td>
<td>2, 3</td>
<td>2, 3</td>
</tr>
<tr>
<td>Fruit base</td>
<td>steeply winged</td>
<td>gently winged</td>
<td>gently winged</td>
</tr>
<tr>
<td>Seed stigma</td>
<td>undulate</td>
<td>fimbriate</td>
<td>fimbriate</td>
</tr>
<tr>
<td>Stem winding</td>
<td>not winding</td>
<td>right-handed</td>
<td>left-handed</td>
</tr>
<tr>
<td>Stigma surface</td>
<td>undulate</td>
<td>smooth</td>
<td>projected</td>
</tr>
<tr>
<td>Wings at fruit apex</td>
<td>flat, U-shaped</td>
<td>flat, V-shaped</td>
<td>twisted</td>
</tr>
</tbody>
</table>

*Fallopia koreana* B. Oh et J. Kim, sp. nov. (Fig. 1)

Haec species facile est distinguere a *F. ciliinervis* et *F. multiflora*, prima ramosa spiga, pauci trichoma pediculibus, infirme evolutis perianthii alis sed etiam caule volubile sinistrorum, predictae stigmas pagina, tortilis fructus apeco, et cetera.

Type: Korea. Chungbuk Prov.: Youngdong-gun, Minju-i-san, 36° 02' N, 127° 51' E, 10 Aug. 1993, B. Oh & J. Kim 93001 (holotype, CBU [Chungbuk National University Herbarium]; isotypes, CBU).

Korean name: Samdohasuo (삼도하수오)

Climbing perennial herb, growing from March to November. Root thickened at connected part of stem, many projected nodes on thickened and branched root. Stem twining left-handed, much elongate, 1.5—2 m or longer. Leaves alternate, cordate, 5—15 cm long, 3—7 cm wide, acuminate at apex, entire at margin. Petioles 1.5—7 cm long. Ocrea membranous, cylindrical. Inflorescences spikes, primarily branched, 2 or 3 flowers per ocreola, few trichomes on peduncle, blooming from June to September. Flowers 3—3.5 mm in diameter, 4—5 mm long. Perianth white, with 3 weakly developed wings. Stamens 8, 1—1.5 mm long. Pistil 1, 1 mm
Fig. 1. *Fallopia koreana* (B. Oh & J. Kim 93001) 1. Habit; 2. Leaf; 3. Gross morphology of flowers and ocreola. 4. Enlarged fruits with three broad wings twisted at fruit apex; 5. Seeds with stigma.
long. Stigma 3, peltate, surface projected. Style short, separate. Ovary trigonous, 0.7–0.8 mm long, 0.4–0.5 mm wide. Fruit broadly obovate, 1–2 cm long, 3–5 mm wide, enclosed by enlarged perianth, with 3 broad wings twisted at fruit apex. Achenes with stigma dark brown, glossy, acutely trigonous, 5–6 mm long, 2–3 mm wide.

The distribution of this species is rather limited. *Fallopia koreana* is also known from the neighboring mountain areas of type locality and a rather distant island: Chirisan, Paegunsan, Hwanghaksan, and Toch’odo. In contrast, *F. ciliïnervis* is distributed throughout Korea. *Fallopia multiflora* is the most vigorous plant growing up to 3 m or more in height, which was introduced from China and has been cultivated as a medicinal plant mainly in the southern part of Korea. This species is also growing as a wild plant around the cultivated area. The three species of *Fallopia* sect. *Pleuropterus* in Korea can be distinguished by the following key.

**Key to the three species of *Fallopia* sect. *Pleuropterus***

1. Stem creeping, red, 0.5–1 m long; root thin; leaves sagittate; flowers 5 or 6 per ocreola ……
   ……………………………………………………………………………………………………………………………… *F. ciliïnervis*

1. Stem climbing, green, 1.5–2 m or longer; root thickened; leaves cordate; flowers 2 or 3 per ocreola
2. Stem twining to the right; spikes secondarily branched; trichomes on peduncle many; fruit 6–8 mm long, apex of wings flattened ………………………………………………………………………………… *F. multiflora*
2. Stem twining to the left; spikes primarily branched; trichomes on peduncle few; fruit 1–2 cm long, apex of wings twisted ………………………………………………………………………………… *F. koreana*

**Literature cited**


닭의덩굴속의 1신종: 삼도하수오

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적 요

한국의 중부지방에서 발견된 닭의덩굴속 하수오절(마다풀과)의 1신종이 기재되었다. 삼도하수오 (*F. koreana* B. Oh et J. Kim)는 원쪽으로 감기는 줄기, 돌출된 주두 표면, 뒤를 뒤에 선한의 특징에서는 물론 1차 분지하는 수상화서, 덤이 거의 없는 화경, 미약하게 발달된 화피의 날개 등이 특징으로 나도하수오 (*F. cilinervis*) 및 하수오 (*F. multiflora*)와 쉽게 구별된다. 한국에 분포하는 것으로 알려진 이들 세 종의 검색표를 제시하였다.

주요어: 마다풀과, 닭의덩굴속 하수오절, 신종, 삼도하수오

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