CHROMOSOME NUMBERS OF SOME PERSICARIA (POLYGONACEAE) SPECIES FROM IRAN

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Mitotic chromosome numbers of 5 taxa of the genus Persicaria (L.) Mill. is reported for Iran for the first time. Subspecies of P. lapathifolia showed 2n = 22 chromosome number supporting the earlier report while the chromosome numbers of P. minor and P. mitis are 2n = 40. Results are compared with previous records.

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Key words. Persicaria, Polygonaceae, Chromosome number, Iran.

Introduction

The genus Persicaria (L.) Mill. comprises about 120 species distributed in moderate regions of North hemisphere. This genus has 6 annual species in Iran. High morphological variation especially in weedy species (Stanford 1925), allo- and autopolyploid hybridization (Timmson 1964, Kim et al. 2008) and phenotypic plasticity (Sultan & Bazzaz 1993) are documented in Persicaria species. Due to the complex taxonomic history and delimitation problems in this genus, some biosystematic studies have been done (Ronse Decraene & Akeroyd 1988, Amiri & Sharifnia 2007, Mosaferi & Keshavarzi 2011, Mosaferi et al. 2011).

Previous cytological studies show that Persicaria has different basic chromosome numbers of x= 10, 11, 12 (Freeman & Reveal 2005). No chromosomal reports were available on Persicaria species of Iran so in order to understand whether there is any relation between diploid chromosome counts and morphological differences particularly in subspecies of P. lapathifolia (L.) Gray.

Materials and methods

We examined six taxa of annual Persicaria species from Iran, as: P. mitis (Schrank) Holub, P. minor (Huds.) Opiz, P. lapathifolia subsp. lapathifolia L., P. lapathifolia subsp. nodosa (Pers.) Á. Löve and P. lapathifolia subsp. brittingeri (Opiz) Sojak. Voucher specimens are deposited at the herbarium of Alzahra University (AUH). This investigation was based on counting mitotic chromosomes. Mature seeds of plants collected from different habitats of Iran (table 1) were germinated in humidified Petri dishes at room temperature. Root tips with length of 0.5-1.0 cm was exposed to a treatment of 0.002 M 8-hydroxyquinoline for 2-3 hours, fixed in 3:1 absolute ethanol: acetic acid, hydrolyzed in 1N HCl for 20 min. and stained in 1% aceto-orcein. Aceto-orcein squash method was applied to the root tips (Singh 2003).

Results and discussion

Persicaria mitis is a tetraploid species which is distributed in Himalayas, North West Europe, Africa, temperate Asia and North America. It grows along water channels and moist soils in 400-2000 m. Our count of 2n=40 agrees with the previous report by Stoeva (1985) (Fig. 1).

P. minor is a species with wide range of
Table 1. Collection data for populations used in this study.

<table>
<thead>
<tr>
<th>Species</th>
<th>Voucher number</th>
<th>Origin</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>P. lapathifolia subsp. nodosa</td>
<td>504</td>
<td>Hamadan province, Heydareh village</td>
<td>Mosaferi</td>
</tr>
<tr>
<td>P. lapathifolia subsp. lapathifolia</td>
<td>506</td>
<td>Kermanshah province, Kermanshah, Gharessoo river</td>
<td>Gholami</td>
</tr>
<tr>
<td>P. lapathifolia subsp. brittenieri</td>
<td>513</td>
<td>Mazandaran province, Noushahr</td>
<td>Amini</td>
</tr>
<tr>
<td>P. mitis</td>
<td>535</td>
<td>Mazandaran province, Abbas abad, Abbas abad forest</td>
<td>Mosaferi</td>
</tr>
<tr>
<td>P. minor</td>
<td>514</td>
<td>Isfahan province, Golpaygan, Saravar village</td>
<td>Mosaferi</td>
</tr>
</tbody>
</table>

morphological traits such as leaf shape, spot and width and flower color in different habitats (Mosaferi et al. 2011). This annual herb is widespread in Europe, Asia and North America. The mitotic chromosome number of 2n=40 is in congruent with Albers & Wisskirchen 1998. (Fig. 2).

P. lapathifolia subsp. lapathifolia occurs in Europe, Asia, and Iran and Afghanistan. This diploid taxon occurs in damp soils and around cultivated lands in 0-1500 m. Our diploid count (2n=22) (Fig. 3) is in accordance with the previous report by Dempsey et al. (1994) and Probatova & Sokolovskaya (1989).

P. lapathifolia subsp. nodosa is diploid which differs from subsp. lapathifolia by having lax inflorescence and red dots on stem (Mosaferi et al. 2010). Its geographic distribution is from Western Himalayas to Western Europe in higher altitudes. Our counts of 2n=22 confirms the count reported by Vanchova & Zaborsky (1980) (Fig. 4).

P. lapathifolia subsp. brittenieri is diploid and has distribution in Western and central Europe and Western Asia. It is found in ditches and moist places in 0-1500m. The diploid chromosome number of 2n=22 is in accordance with the previous report by Albers & Wisskirchen 1998) (Fig. 5).

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References
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