

## Short Communication

# Chromosome number in *Halophytum ameghinoi* (Halophytaceae)

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**Abstract.** The chromosome number and karyotype of *Halophytum ameghinoi* (Speg.) Speg. was found to be  $2n = 24$  and  $12m + 10sm + 2t$ , respectively. Meiosis was regular and 12 bivalents were observed. The relationships of this monotypic family are briefly discussed.

**Key words:** Halophytaceae, *Halophytum ameghinoi*, chromosome number, karyotype, systematic relationships.

Halophytaceae is an endemic South American family represented by a single species, *Halophytum ameghinoi* (Speg.) Speg. (Soriano 1946, 1984). This taxon grows in Argentina from Catamarca in the North to Santa Cruz in the South. It is an ephemeral succulent annual growing in poor, barren soils, usually of the type of “bad lands”, in arid regions, with an annual rainfall below 200 mm. Its chromosome number and karyotype have been so far unknown and the family is listed by Raven (1975) among the 44 for which no cytological information was available at that time out of 354 families recognized by Cronquist (1968). Later on, however, Cronquist (1981) included *Halophytum* among the Chenopodiaceae and assigned it  $x = 6-9$  (together with Dysphania-

ceae and Salicorniaceae). However, despite a bibliographical search we have not found any previous chromosome count for *Halophytum*.

## Materials and methods

The following populations were studied: Argentina, Prov. La Rioja, Dpto. Gral. Lavalle, ruta 40, entre Pagancillo y Villa Unión, 1200 m, Pozner 160, April 7, 1998 (SI). Prov. San Juan, Dpto. Ullún, Lomas de las Tapias, cruce del camino de Bahía de las Tablas, 768 m ( $31^{\circ} 27'S$ ,  $68^{\circ} 38'N$ ), Pozner 154, April 5, 1998 (SI); Dpto. Albardón, ruta 40, frente a Sierra de Villicum, 600 m, Kiesling 9302, November 10, 1998 (SI).

Karyotypes were studied from root tip cells. These were taken either from germinating seeds or from young plants that were taken from the field. They were pretreated in 8-hydroxyquinoline 0,002 M during 4 and 1/2 hours in refrigerator and fixed in 3 absolute ethanol:1 acetic acid. Later were hydrolyzed in HCl 5N during 30 min. The squash was made in 2% propionic haematoxylin adding ferric citrate as a mordant (Sáez 1960, Núñez 1968). Meiotic observations were made on young staminate inflorescences fixed in 6 absolute ethanol:3 chloroform:1 acetic acid. Anthers were dissected in 2% propionic haematoxylin adding ferric citrate as a mordant.

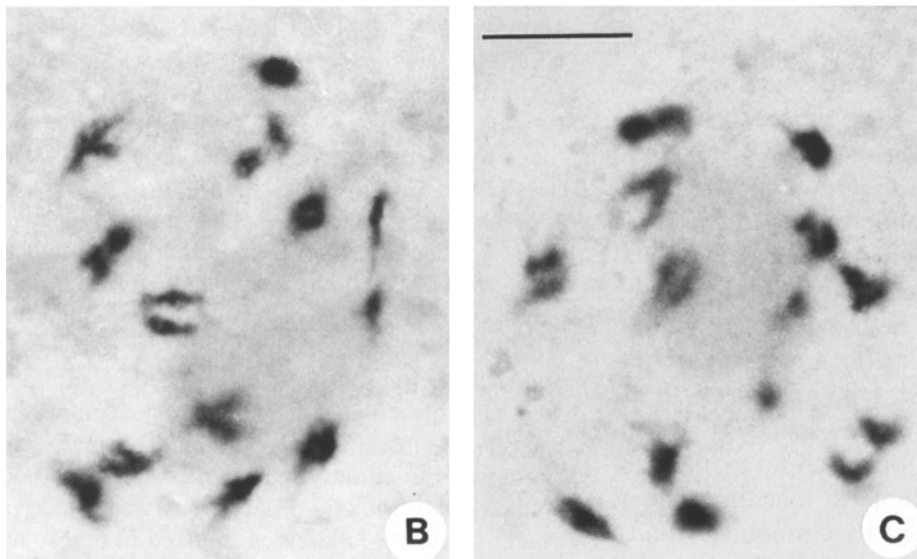
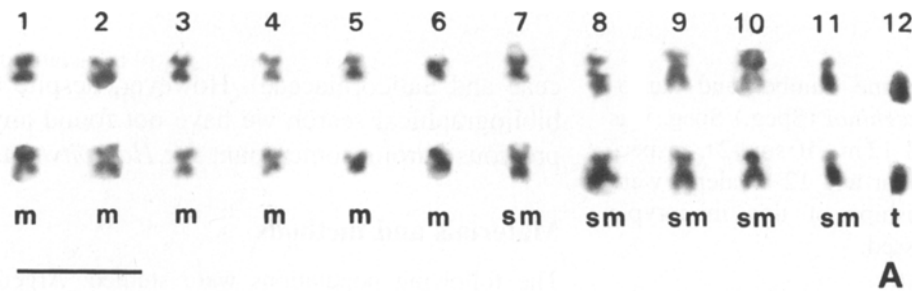
## Results and discussion

Mitotic metaphase plates of Pozner 160 showed  $2n=24$ . Chromosomes are small, their length ranging from 2 to  $3.6\mu\text{m}$ . The karyotype is fairly symmetric, composed of 6 chromosome pairs with median centromere (m), 5 pairs with submedian centromere (sm) and one pair with subterminal centromere (t). Pair number 7 shows a round satellite (Fig. 1A).

In Pozner 154 a clear tetraploid cell ( $2n=48$ ) was observed which indicates that there is polysomaty. Other cells of the same plant showed  $2n=ca. 24$ . The tetraploid cell showed clearly the 4 chromosomes with subterminal centromere. In Kiesling 9302

meiosis could be studied and 18 cells showed 12 bivalents (Fig. 1B–C).

Erdtman (1952) studied the 6-porate pollen of *Halophytum ameghinoi* and found that it showed similarities to the pollen of Basellaceae and Phytolaccaceae; other palynological studies of Skvarla and Nowicke (1996) noted similarities of *Halophytum* with Amaranthaceae and Chenopodiaceae. Nowicke and Skvarla (1979) have supported a separate family status. Takhtajan (1959), based on floral traits, pointed out the relationships of Halophytaceae with Amaranthaceae, Chenopodiaceae and Phytolaccaceae. Later (Takhtajan 1969) noted that Halophytaceae stands close to Portulacaceae and Basellaceae. Hutchinson (1959, 1969) and Cronquist (1981)



**Fig. 1.** *Halophytum ameghinoi*. A Karyogram of a root tip cell (Pozner 160); B–C diakinesis with 12 bivalents (Kiesling 9302). The bars represent  $10\mu\text{m}$

included *Halophytum* within the Chenopodiaceae. However, the presence of betalains and P-type sieve tube plastids (Hunziker et al. 1974, Behnke 1976), the ontogeny of stomata (Di Fulvio 1975) and the basic chromosome number  $x = 12$  of *Halophytum ameghinoi* found here, strongly support the idea of a close relationship between the Basellaceae ( $x = 11, 12$ ) and perhaps also the Hectorellaceae ( $x = 12$ ) and Portulacaceae ( $x = 4, 5, 6, 8, 9, 10, 11, 12$ ).

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