

Chromosome number and karyotype analysis in *Pleuroclada albescens* (Hook.) Spruce (*Hepaticae, Hygrobiellaceae*)

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Pleuroclada albescens, a rather common snow-bed hepatic, is represented in the Tatry Mountains by two varieties: var. *albescens* and var. *islandica* (Nees) Spruce. As the chromosome set of *Pleuroclada* was not investigated so far, examination of the karyotype was undertaken to obtain additional data about these two varieties.

MATERIAL AND METHODS

Stems of *Pleuroclada albescens* were collected on granitic rocks in the Tatry Mountains during the years 1966 and 1967. One part of the material was fixed in the field, the rest has been kept in a shady place for about two weeks thereafter. Cytologically, *Pleuroclada albescens* is a rather difficult species to work with. Generally accepted fixing and staining methods (Lorbeer 1934; Heitz 1928; Lowry 1954; Mehra 1959; Al-Aish 1960; Lewis 1957) did not give satisfying results. After many trials the following method turned out to be satisfactory. Stem tips were put in the fixative AAA (3:1) and kept in it for 7—10 days. Then the apices were squashed in hematoxyline. Somatic plates were drawn by means of a drawing tubus (Zeiss) and photomicrographs were taken with an automatic MF (Zeiss) device.

RESULTS

Similarly as in other *Jungermanniales* investigated so far (Mehra 1957, 1958), both forms of *Pleuroclada* (as shown in fig 3A, 3B and 4A, 4B) have a characteristic number of chromosomes $n = 9$. Measurements of the length of somatic complement of chromosomes gave the following picture: 1 long chromosome (3μ), 7 chromosomes of medium length ($1,8\mu$) and 1 short chromosome (1μ). Because of rather small differences in chromosome length the karyotype is of a symmetric type (Stebbins 1958). There were no differences observed in chromosome length and shape in the both varieties of *Pleuroclada albescens*.

In the prophase stage (fig. 2) a distinct heterochromatic chromosome can be seen which, similarly to other *Bryophytes* (Allen 1935, Segawa 1957, Tatuno 1945,

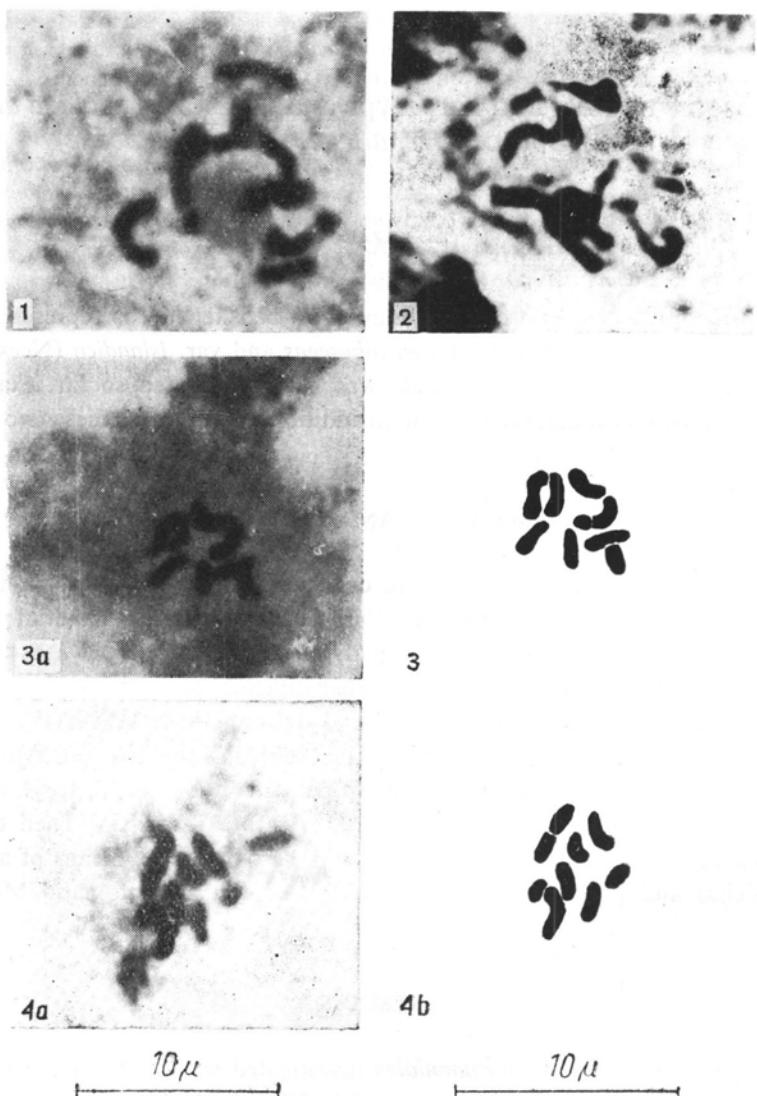


Fig. 1—4b. Somatic chromosomes in *Pleuroclada albescens*: 1 — prophase in var. *albescens*; 2 — prophase in var. *islandica* showing heterochromosome (at the left side of nucleolus); 3a — metaphase plate in var. *albescens*; 3b — explanatory diagram of it; 4a — mataphase plate in var. *islandica*; 4b — explanatory diagram of it

Yano 1951, 1953, 1955, Wylie 1957, Lewis 1961), is probably a sex chromosome. Unfortunately, no meiotic plates were found to solve this problem definitely.

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REFERENCES

- Allen C. E., 1935, The Genetics of Bryophytes, Bot. Rev. 8: 269—291.
 Al-Aish M., Anderson L. E., 1960, The chromosomes of *Batrmaidula Carolinae*, The Bryologist 1:26—30.
 Heitz E., 1928, Das Heterochromatin der Moose, Jahrb. f. wiss. Bot. 69 (5): 762—818.
 Lewis K. R., 1961, The genetics of Bryophytes, Trans. Bryt. Bryol. Soc. 4: 111—130.
 Lewis K. R., 1957, Squash Techniques in the Cytological Investigation of Mosses, Trans. Bryt. Bryol. Soc. 3: 279—284.
 Lorbeer G., 1934, Die Zytologie der Lebermose I, Jahrb. f. wiss. Bot. 80: 567—818.
 Lowry R. J., 1954, Chromosome numbers and relationships in the genus *Atrichum* in North America, Am. Jour. Bot. 5: 410—414.
 Lowry R. J., 1954, The chromosome number and chromosome morphology of *Batramia pomiformis*, The Bryologist 1:1—5.
 Mehra P. N., 1957, A new suggestion on the origin of thallus in the *Marchantiales* I. The thallus structure, Am. Jour. Bot. 6: 505—513.
 Mehra P. N., 1957, A new suggestion on the origin of thallus in the *Marchantiales* II. The theory, Am. Jour. Bot. 7: 573—581.
 Mehra P. N., Pathania R. S., 1959, Chromosome Numbers in Some Western Himalayan, *Acrogynous Jungermanniales*, The Bryologist 4: 242—247.
 Segawa M., 1957, Structural sex chromosomes of two species in *Plagiochila*, Jap. Jour. Gen. 32: 197—202.
 Stebbins G. L., 1958, Zmiennaść i ewolucja roślin, PWN, Warszawa, 323—325.
 Tatuno S., 1954, Beziehungen zwischen Chromosomen und Nukleolen von *Dumontiera hirsuta*, Bot. Mag. 67: 36—37.
 Wylie A. P., 1957, The chromosome numbers of mosses, Trans. Bryt. Bryol. Soc. 3: 260—278.
 Yano K., 1951, On the chromosome in some mosses. I. Bot. Mag. 64: 234—237.
 Yano K., 1954, On the chromosomes in some mosses V. The karyotypes and sex Chromosomes in some species of *Polytrichaceae*. Bot. Mag. 67: 43—48.
 Yano K., 1955, On the chromosomes in some mosses X, Bot. Mag. 68: 216—220.

*Liczba chromosomów i analiza kariotypu u Pleuroclada albescens (Hook.) Spruce
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Streszczenie

Pleuroclada albescens jest gatunkiem pospolicie występującym w alpejskiej krainie Tatr w postaci dwu form: var. *albescens* i var. *islandica* (Nees) Spruce. Konieczność zbadania kariotypu powstała podczas pracy nad jej zmiennością i w poszukiwaniu cech charakteryzujących obie formy. Do opracowania użyto roślin zebranych w Tatrach w 1966 i 1967 r. Wykazano, że obie formy *Pleuroclada albescens* posiadają charakterystyczną dla *Jungermanniales* liczbę chromosomów $n = 9$. Porównując kariotypy obu form, nie zaobserwowano wyraźnych różnic ani w wielkości chromosomów, ani w ich kształcie.