CONCLUSIONS FROM CYTOTAXONOMICAL AND CYTOGEOGRAPHICAL STUDIES OF SELECTED SPECIES FROM THE GENERA *POTENTILLA* (ROSACEAE), *HIERACIUM* AND *PILOSELLA* (ASTERACEAE) AS WELL AS *ACONITUM* (RANUNCULACEAE) BELONGING TO DIFFERENT PHYLOGENETIC GROUPS WITHIN *MAGNOLIOPSIDA*

Summary

Biosystematics of some species of the genus *Potentilla, Hieracium, Pilosella* and *Aconitum* belonging to different phylogenetic groups within *Magnoliopsida* is surveyed. The information obtained from classical cytogenetic studies is usually treated as a mere starting point for further analyses, which can be carried out with the help of molecular biology methods such as fluorescence in situ hybridization (FISH), genomic *in situ* hybridization (GISH) or bacterial artificial chromosome method (BAC). The biosystematic studies put emphasis on: getting to know (i) the phenomena of hybridization and polyploidization connected with exceptional way of agamic reproduction of agamospermous species, and (ii) the direction of the course of evolution within species and genus in connection with migration of species and colonization of new habitats. Chromosome variation includes differences in their number, size, morphology, content of DNA, karyotype symmetry and inner organization (chromosome bands). On this basis, the course of evolution among taxa can be tracked, their reciprocal relationships determined and intergeneric comparisons performed.