ABSTRACT

Presently, cytomorphological studies have been carried out in 200 species falling into 119 genera and 33 families of dicotyledonous plants from Kinnaur district. All the species have been studied meiotically for the first time from the area. The chromosome count for *Eriocycla caespitosa* (n=11) adds a first ever chromosome record for the genus *Eriocycla*. First ever chromosome counts have been made for 25 species at world level and 37 species at India level. New intraspecific diploid or polyploid cytotypes are recorded for the first time in 10 species at world level and 9 species at India level. New intraspecific aneuploid cytotypes have been added to the previous records for the first time in 5 species at world level and 4 species at India level. Intraspecific polyploid cytotypes are detected in *Spergularia diandra* (2x, 4x), *Indigofera heterantha* (2x, 6x), and *Veronica anagallis-aquatica* (2x, 4x). The intraspecific morphological variations are noticed in 15 species. Out of total 200 species, 50 species exist at different polyploid levels. 64 species showed intraspecific aneuploidy cytotypes at diploid and/or polyploid level. Interestingly, as many as 70 species showed irregular meiotic course which include synaptic irregularities, spindle abnormalities, syncytes, cytomixis, pollen fusion and formation of restitution nucleus which resulted into the formation of unreduced (2n) gametes in the form of large/giant pollen grains. Harsh climatic conditions particularly freezing temperature seem to have caused such meiotic abnormalities in the plants which affected the genetic constitution and pollen viability and lead to reduced reproductive success through seeds. In turn such plants have adopted the alternate means of propagation through vegetative means like rootsuckers, rhizomes, stolons, bulbs and tubers.

Presently, 93 species belonging to 73 genera and 24 families are studied ethnobotanically. Among the various plant parts used ethnobotanically, leaves (33.62%) are most frequently used.