

DECONDENSATION OF CHROMOSOMAL 45S rDNA SITES IN *LOLIUM* SPECIES DOES NOT PROMOTE LOSS OF DNA

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Fragile sites (FS) are reported in the 45S rDNA containing NOR region of *Lolium* species, likely resulting in breaks and chromosomal lesions^{1,2,3}. If not repaired such breaks could generate fragments and cause the loss of genetic material and genomic instability³. The formation of neocentromeres could prevent the loss of chromosome fragments. To re-evaluate whether such process occurs we determined the frequency of micronuclei in meristematic cells, the genome size stability and the occurrence of neocentromeres in *Lolium multiflorum* and *Lolium perenne*. Application of antibodies to mark pericentromeric (H3S28ph) and centromeric (CENH3) regions indicated the absence of neocentromeric activity. The percentage of micronuclei in both species was around 0.1%. Therefore, so-called fragments were not eliminated and flow cytometry confirmed the stability of the genome size. FISH with labelled 45S rDNA and Yoyo staining of metaphase chromosomes showed that extended NOR-regions form DAPI-negative thin and long chromatin fibers. Hence, cell-cycle dependent decondensation of 45S rDNA containing chromatin is related to the previously described phenomenon of fragile sites in *Lolium*.

References

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