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**Development of polyploids of some citrus species by in-vitro colchicine treatments and early selection by flow cytometry**

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Developments in citrus biotechnology, especially in callus cultures have opened new opportunities to develop new rootstocks and cultivars. Polyploidy is one of the main breeding goals in order to obtain new genotypes with improved characteristics to improve citrus germplasm. Flow cytometry is a highly advanced early and rapid selection technique that aims at analyzing mutant cells and its components, including the total genome sizes. In this research, embryogenic callus lines of six citrus species including orange (*Citrus sinensis*), lemon (*Citrus limon*), mandarin (*Citrus reticulata*), kinkoje (*Citrus obovoidea*), hyokan (*Citrus ampullaceae*) and sanbokan (*Citrus sulcata*) were entered in this investigation. Colchicine was applied as a chemical mutagen using different concentrations:0.0%, 0.01%, 0.05% and 0.1% on embryogenic callus lines cultured on Murashige and Tucker (MT) medium supplemented with 500 mg/l malt extract for 8 weeks. Callus lines were transferred to MT medium without colchicine and sub-cultured during 12 weeks after treatment. Somatic embryos arising from the callus in Petri dishes were transferred for germination into tubes containing MT medium containing 5 mg/l GA3. The regenerated plantlets were evaluated for genome sizes and ploidy determination by flow cytometry analysis. According to the results colchicine treatments induced different polyploidy ratios in different Citrus species. The highest polyploidy ratio (27%) was obtained in oranges from 0.1% colchicine treatment followed by lemon (22%) from the same concentration of colchicine.