S04 - Session P1 - New Tools II - Coffee microspore cultivation to attain doubled-haploid stable plantlets

Monday, August 15, 2022 5:10 PM to 5:15 PM · 5 min. (Europe/Paris)

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S04 International symposium on In vitro technology and micropropagated plants

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The aim of this study was to explore the potentials of progenies produced by the introgression of disease resistance from related Coffea species to C. arabica . In the IDR-Parana, Brazil, hybrids of C. arabica (tetraploid) x C. racemosa (diploid) were obtained. Self-pollination of some of these hybrids produced very mild yields, despite the backcros to C. arabica . In an attempt to regenerate stable double-haploids, anthers and isolated microspores were grown in vitro . It was assumed that chromosomes captured in a microspore after meiosis can acquire homo and/or homeologous stability faster in vitro than in vivo. C. arabica anthers served as control. Flowers were collected when the young microspores were uninucleated, and disinfected with 8% active chlorine. Microspores were extracted in 90 mM mannitol using a food mixer that worked for a few seconds, washed and centrifuged twice at 100xg and grown in modified N6 liquid medium (10 5 cells/mL in 35 mm diameter plates). Explants were grown continuously for six months on the same N6 medium containing 6.5 mg/L auxins, 1.0 mg/L cytokinins and 0.5 mg/L gibberellin (GA3), at 27 o C in the dark. Isolated microspores produced embryo-like structures or microcalli at very low frequencies (0.3 per plate). The anthers, on the other hand, produced embryogenic calli . One particular endogenous fungus infected 70% of the control anthers but 5% produced friable calli . Some of these were embryogenic, but arrested when compared to calli produced by the interspecific hybrid anthers. Regarding the hybrid anthers, 25% were infected by a same endogenous bacteria but 8% produced embryogenic tissue, with globular embryos multiplying and maturing simultaneously upon transfer to N6 medium without growth regulators. After 1.2 years, the photomorphogenesis has been induced under light, and auxin/cytokinin ratio = 2 plus GA3. Embrapa Cafe 10.18.20.035.00.05.
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Type of sessions	Eposter Flash Presentation
Type of broadcast	In person
Keywords	embryogenesis pollen Rubiaceae
Room	Atrium 3 - Screen 2

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Fri, Aug 19, 2022 10:30 AM

Speakers

Paula cristina s ANGELO
Researcher, Dr.
EMBRAPA COFFEE - IDR PARANÁ

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