Development of approach to obtain *Brachypodium distachyon* L. regenerative plants with morphogenetic stability

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The aim of the research is development of effective methodological approaches of *in vitro* cultivation, object 21 line (BD21) B. distachyon. In order to develop cultivation methods, ability for callus formation, regeneration of generative and vegetative organs of VD21 was studied. To cultivate, Linsmayer-Skoog and Murashige-Skoog medium, additional introduction of phytohormones was used. Aseptic culture conditions for callusogenesis cultivation: under dark conditions at a temperature of 24°C, for t shoots regeneration: 16/8 hour photoperiod and lighting of 3000 lux. Inflorescence and immature embryos isolated from green spikes of vegetating plants and isolated embryos from mature seeds were used as primary explants to induce callus formation *in vitro*. During immature embryo cultivation, callus formation takes place near the corimbe for 20-25 days. During the cultivation of whole caryopsis with mature embryos, the sprouts grew after a week of cultivation on MS medium without hormones. The level of maturity of isolated caryopsis has a significant influence on the callus formation and the type of callus tissue. The mature caryopsis formed callus on the 10th day of cultivation with a frequency of 75%. The cultivation of the overgrown caryopsis in the dark on medium MS 1 with 2 mg/L 2.4 DPA, led to the formation of a primary shoot in 60% of explants; the formation of callus in the area of the scute, but for 30-35 days. Passage of the callus on the same medium and on the hormone-free medium led to the appearance of greenish pointwise impregnation of 30% of the calluses. For microclonal propagation, nodal segments of young shoots of plants were introduced into the culture. To culture introduction, side shoots 5 cm long with 3-4 interstitial sites were cut, the microcrops were planted in inducing media. The shoot-forming capacity of primary explants was about 59%; the multiplication factor for two passages was 5.7.

Recent Publications

1. Omirbekova N, Kenzhebayeva S, Capstaff N, Fatma Sarsu, et al. (2017) Searching a spring wheat mutation resource for correlations between yield, grain size, and quality parameters. Journal of Crop Improvement 31:209-228.
2. Omirbekova N, Kenzhebayeva S, Doktyrbay G et al. (2016) Frequency of vernalization requirement associated dominant VRN-A1 gene and earliness related Esp-A1 candidate genes in advanced wheat mutant lines and effect of allele on flowering time. International Journal of Biology and Chemistry 9:24-30.
3. Omirbekova N, Zhussupova A and Zhunusbayeva Zh (2015) *Brachypodium distachyon* as a model plant in wheat rust research. International Journal of Biology and Chemistry 2:52-55.

Biography

Omirbekova N Zh graduated from Al-Farabi Kazakh National University and Lomonosov Moscow State University and has completed her Doctoral studies from Al-Farabi Kazakh National University. She is currently a Professor at the Department of Molecular Biology and Genetics, School of Biology and Biotechnology of KazNU named after Al-Farabi (Republic of Kazakhstan). Her research interests include chemical mutagenesis, genetics and biochemistry of wheat. She has published more than 30 papers in high valued journals.

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