

THE ALKALOID CYTISINE IN THE CELL CULTURE

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Alkaloids are vegetative establishments of complex and original structure with nitrous heterocycles in the basis. For a long time they drew researchers' attention because of their unique and specific physiological effect on alive organisms. Not all the representatives of the globe's flora contain these unique substances. Alkaloid cytosine is to be found mainly in the plants of the fabaceous family - Fabaceae. For the cytosine production the seeds of *Thermopsis lanceolata* R.Br (*T. lanceolata* R.Br) and *Cytisus laburnum* (*C. laburnum*) are used as a raw material. The object of the research is *T. lanceolata* cell culture. Sterile sprouts are used at the first stage of the experiment. Callus genesis is accompanied with dedifferentiation. It leads to the cellular organization simplification. Based on an important property of a plant cell, such as totipotency, there appears the formation of the "de novo" biosynthetic device. The cultivation algorithm consists of two basic stages: (i) the cultivation conditions optimization of callus with a high level of the primary metabolites biosynthesis (Aspartat – lysine); (ii) the research of cultivation chemical and physical factors influence on the secondary metabolite (cytosine) biosynthesis and accumulation. During the cultivation the Murashige and Skoog classical recipe of nutrient medium will be used. Optimization of the cultivation conditions will concern the phytohormones, macro- and micronutrients content, as the purpose of optimization is the production of the determined high-level competence embryogenical callus. The main problem is genetic heterogeneity of a cellular population and instability of morpho-physiological processes. The correct management of higher plants cells population is possible at the synchronization of a cellular cycle phases. The references analysis has shown that it is almost impossible to synchronize cellular cycles in the culture of plant tissue. The application of chemical inhibitors allows achieving sufficiently high level of SPCC. Their use also results in the rise of a mitotic index level. Another method of SPCC is based on the effect of limiting factors, such as, the reduction of phytohormones level and carbohydrates and nitrogen sources in a nutrient medium. The cells accumulation in the mitosis phase will allow getting a cellular mass ready to adequate response to chemical and physical influences. It promotes the formation of the "de novo" biosynthetic device according to genetic conditionality. The following receptions will be used for the cells genetic potential activation: (i) optimization of organic additives concentration; (ii) optimal physical parameters installation. The process of plant cells cultivation is carried out according to the researcher's objectives. In one case it is a biomass accumulation. In the second one it is the reception of producers' strains. Carrying out the research within the limits of the first task, it is important to optimize a nutrient medium composition at the level of macro-micro elements and phytohormones. To increase the cellular clusters productivity the work is carried out at the organic additives level.