Differences in development *in vitro* of *Cannabis sativa* L. (variety K290) under the influence of various mineral components of nutrients, vitamins and plant growth regulators

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In vitro plant cultures of *Cannabis sativa* may have a valuable contribution to the production of prospective genotypes as high-quality propagation material for further breeding work towards new applications of hemp in fields of economy and medicine. The key to this study is to optimize the micropropagation process of the selected Russian variety K290 *C. sativa*, which has the appropriate level of cannabinoids.

The aim of the present work was to comparative phenotypic study in terms of assessing the effect of the type of medium with different mineral salt content, i.e. Schenk-Hildebrandt medium (SH) and Gamborg medium (B-5), addition of vitamins and IAA auxin on growth of shoot with leaves during induction and development of adventitious roots.

In total, 12 variants were compared, taking into account the presence of vitamins and two concentrations of auxin IAA (0.5 and 1.0 mg/L). Nodal and apical fragments of plants obtained from seeds were selected as explants. The experiment was performed in triplicate.

Our results show that in terms of shoot length and number of leaves, the SH with the addition of IAA at a concentration of 1.0 mg/L without vitamins is the most effective. It was also found that IAA at a concentration of 0.5 mg/L in SH stimulated the formation of adventitious shoots (n = 3.21 after 3 weeks). The average number of roots was 4.65 per shoot on the SH with 0.5 mg/L.

Therefore, it can be concluded that a higher content of potassium ions as well as cobalt, copper, magnesium, molybdenum ions and a lower content of calcium, zinc, boron, manganese and iron ions in the SH medium positively influenced the development of shoots and leaves. In addition, it was found that after 6 weeks, the number of leaves and their size had doubled.

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