

MODULATION OF BIOLOGICALLY ACTIVE IONS BY MEANS OF COMBINED MAGNETIC FIELD

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A few cases of influence of combined magnetic-fields on the gravitropic reaction of plants are considered. 1. The combined magnetic field has an alternative component that is adjusted on cyclotron frequency of ions of calcium, of ions of magnesium, of ions of auxin and of ions of abscisic acid. The time dependences of biological effects were measured.

We used the following methods for obtaining well reproducible magnetic conditions. The shielding of external magnetic field in work volume and creation in it the artificial MF with desired characteristics in it was fulfilled. The first method is the using of μ -metal shield, the second one is the using of superconductive shield.

The investigation of combined magnetic field (CMF) influence on the plants roots gravitropic reaction was studied in details. The negative gravitropic reaction was negative was found.

The action of CMF with the cyclotron frequency for Mg^{2+} was more effective for the regeneration of cell wall in comparison with the control samples. The number of experimental protoplasts (in CMF) with regenerated cell wall was in two times more than in the control. It is possible; this phenomenon was consequence of the activation of cellulose-synthase under influence of CMF, which was adjusted to the cyclotron frequency of Mg^{2+} .

CMF tuned for cyclotron frequencies of ions auxin changes the gravitropic reaction essentially. CMF tuned for cyclotron frequencies of ions abscisic acid inhibited the gravitropic reaction at all.