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**“HOLOGRAPHIC INDUCTION OF MORPHOGENESIS
IN CALLUS TISSUES OF TOP FRUIT PLANTS”**

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ABSTRACT

Low intensive coherent radiation (LICR) effect on induction of morphogenesis apple, plum, cherry callus tissues *in vitro* was analysed. Generated by He-Ne lasers unmodulated i.e. without phase conversion LICR intensified just those morphogenesis processes which were expressed even faintly in control (without radiation). For example, 1,5-2-fold increase of regenerants produced was observed under optimal exposition. Unmodulated laser irradiation was inefficient when callus tissue was characterized by lack of visible potency to differentiation, that confirms the ideas about non-selfefficiency of the biological action of exogenous coherent radiation*. The attempt to change the structural organization of callus tissue with low morphogenesis potential by modulated LACR was under-taken. Calluses of leaf origin and micropropagated shoots of cherry variety Kharitonovskaya were co-cultivated on the medium for inducing morphogenesis. Irradiation according to scheme of Denisyuk-type volume

* Budagovsky A.V. Principles of action of coherent electromagnetic fields upon living organisms//Biofotonics. - M.: Bioinform Services Co, 1995. - P.233-255.

hologram resulted in interference of two coherent waves with flat and by vegetating shoots transformed fronts in callus zone. In callus tissue carrying out the functions of recording medium their super position has formed the new distribution of coherent field (hologram), reflecting the structural organization of shoot differentiated tissues. As a result of spatial modulated irradiation proliferating processes were stimulated in the strictly definite regions of callus tissues which, probably, were initial zone of morphogenesis. Only 2 % of regenerants were produced in the result of the given experiment. But in control and under the effect of unmodulated coherent radiation the development of shoots from undifferent tissues was not observed. Use of the genotype with more efficient regenerative ability (cherry variety Zhukovskaya) on MS medium with 4 mg/l BAP and 0,5 mg/l GA allowed the following number of regenerant to be obtained: control $3,6 \pm 2,0\%$; unmodulated laser radiation $8,3 \pm 5,6\%$; modulated radiation (hologram) $26,1 \pm 9,2\%$. In the course of investigations modulation of coherent field by different tissues including unrelated genotypes is planned.