

## Transgenic plants-immunomodulators for animal husbandry

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In modern pharmacology, there is a tendency to move from low molecular weight drugs to protein drugs. Interferon is among them. Interferon is used in animal husbandry to prevent and treat viral and bacterial diseases, as a single drug and as an adjuvant for vaccines and antibiotics to increase their efficiency and reduce the amount of use. After interferon therapy, meat, milk and eggs can be consumed without restrictions. Currently, interferon for veterinary purposes is obtained using genetically modified organisms (mainly bacteria). The limiting factor is the high cost of the active substance isolating and purifying, which is up to 80–90% of the product cost. Edible plants-producers can solve this problem. Plants have the lowest price per unit of biomass, are not infected by mammalian pathogens, and have an eukaryotic system of protein synthesis.

Transgenic tobacco plants (*Nicotiana tabacum* L.) for the production of bovine gamma-interferon were obtained by agrobacterium mediated transformation at the Department of Genetics and Biotechnology, Saint Petersburg State University. Testing of this model showed that interferon is successfully produced in plants and retains biological activity, including oral administration. Problems were also identified: tobacco toxicity and low levels of protein accumulation. At the next stage of the experiment, it was decided to transform edible carrot (*Daucus carota*) plants, modify the target protein (shorten) to increase its resistance to proteolytic degradation, and use the pSRD1 root-specific promoter. At present, the corresponding transgenic constructs have been obtained, the effectiveness of which will be determined first on the carrot hairy roots, and then on whole carrot plants.

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