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Over expression of human interferon α 2a gene in *Chlamydomonas reinhardtii* under a biotic stress

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The Interferon- α 2a (IFN- α 2a) is a principle cytokine that has regulatory role in mammalian immune systems. The coding sequence of human interferon α 2a(hu-IFN- α 2a) gene was cloned into binary vector pTRAK, a derivative of pPAM (gi13508478). The recombinant plasmid was transferred into *Agrobacterium tumefaciens* strain (GV3101). Then the hu-IFN- α 2a gene was introduced into *Agrobacterium*-mediated transformation to *Chlamydomonas reinhardtii* (Kumar *et al.* 2004)and (Cha *et al.* 2012), with modifications. carrying hu-IFN- α 2a gene. to confirmed the well integrity and positive colonies. ten cell line were taken for PCR amplification. Results indicate that hu-IFN- α 2a gene has been integrated into the *Chlamydomonas reinhardtii* genome, with transcription products of. hIFN- α 2a. Sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) manifested a specific protein band at 19.5 KD of five different transgenic *Chlamydomonas reinhardtii*. Hu-IFN α 2A protein was detected by the enzyme linked immunosorbant assay (ELISA) and RT-PCR. These results suggest that *Chlamydomonas reinhardtii* can be used to produce many biologically active mammalian proteins that accumulate in target organelles such as protein bodies with low cost with high efficiency. Cytotoxicity of hu-IFN α 2a extracts from three line of transgenic alga was evaluated through intraperitoneal and subcutaneous studies using Albino mice infected with Ehrlich ascites carcinoma. The results revealed that an obvious reduction in fluid volumes by (85%,68% and 75%less than untreated animals as the infected mice injected intraperitoneal with 21.45 ug/kg body wt. Whereas under subcutaneous injection the original mass size reduced by 93% as compared with untreated animals.

Keywords: Human interferon α 2a, *Agrobacterium tumefaciens*, SDS-PAGE, TAP medium, immunosorbant assay (ELISA), Ehrlich ascites carcinoma (EAS CELLS)

Biography

Emad hamdy is currently a permanent researcher at Biotechnology Labs, Faculty of Science, Ismailia, A Suez Canal Univeristy. I has Bachelor science in Chemist-Botany(good grade)- Faculty of Science- Zagazig- university- Sharkia – Egypt, Diploma in Applied Microbiology (good grade) - Faculty of Science - Banha- Univeristy. and MSc in Microbiology (2014), Faculty of Science, Zagazig University, Egypt. I accumulated 12-years of experience in quality and infection control, and appointed to a number of key jobs; ISO 9001:2015 Lead Auditor, quality manager and quality and infection control manager in Techno scan group, and senior quality assurance specialist and internal auditor at NSA Company, 2010- till date.

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