

Soypeptide lunasin as an immune modulating agent: Implication in cancer immunotherapy

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Cytokine immunotherapy enhances the anti-tumor immunity and is now part of the therapeutic armamentarium for cancer treatment. We have previously reported that heavily-treated lymphoma patients have acquired deficiency of Signal Transducer and Activator of Transcription 4 (STAT4), which results in defective production of IFN γ following IL-12 immunotherapy. With the goal of further improvement in cytokine immunotherapy, we examined the effects of a soybean peptide called lunasin that exhibits immunostimulatory effects. Adding lunasin to IL-12- or IL-2-stimulated NK cell cultures demonstrated synergistic effects in the induction of IFNG and genes involved in cytotoxicity. The combination of lunasin and cytokine cocktails (IL-12 plus IL-2) was capable of restoring IFN γ production by NK cells in post-transplant lymphoma patients who have defective cytokine responses. In addition, NK cells stimulated with lunasin plus cytokines have higher tumoricidal activity than those stimulated with cytokine alone using in vitro and in vivo tumor models. The underlying mechanism responsible for the effects of lunasin on NK cells is likely due to epigenetic modulation on target gene loci. Thus, the combination of lunasin and selected cytokine (designated as lunakine) is superior to cytokine alone and could be a novel therapeutic to improve the efficacy of cytokine immunotherapy.

Biography

Hua-Chen Chang is Assistant Professor in the Department of Biology at IUPUI, and the founder of Immune Peptide Therapeutics, LLC. Chang received her Ph.D. from Purdue University and obtained postdoctoral training in Dr. Mark Kaplan's laboratory from Indiana University School of Medicine. She has been trained as a molecular immunologist, and had recent success in publishing in journals including Blood, Immunity and Nature Immunology on the role of transcription factors in the development of T helper cell. Her lab is now focusing on enhancing the efficacy of cancer immunotherapy using soy peptide called lunasin as an immune modulating agent.

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