

Mechanisms of Gene Regulation by Soy Peptide Lunasin in Innate Immune Cells

Félix M. Casiano-Rivera¹, Chun-Yu Tung¹, Hua-Chen Chang¹

¹Department of Biology, Purdue School of Science

Lunasin is a seed peptide containing 43 amino acids, originally isolated from soybeans. Recently, a novel function of lunasin was discovered, as it acts as an immune modulating agent regulating gene expression of various innate immune cells. Lunasin strongly activated the expression of genes encoding for type I interferon and inflammatory cytokines. Nonetheless, the molecular mechanisms of lunasin's gene regulation are relatively unknown. Our current hypothesis states that lunasin is able to induce activation of various transcription factors, resulting in gene expression in immune cells. Human dendritic cells (DCs) or monocytes were purified from peripheral blood mononuclear cells (PBMCs) in order to determine the activation of transcription factors. Phosphorylation of STAT1 and NF- κ B (p65) were evident in cells treated with lunasin using flow cytometry and Western blotting. The results will ultimately lead to the signaling pathways involved in gene expression regulated by lunasin in innate immune cells. By defining the signaling pathway of lunasin, we can have a better understanding of its application in immune modulation.

Mentors: Chun-Yu Tung and Hua-Chen Chang, Department of Biology, School of Science, IUPUI