



# Modulating Innate Immune Cell Activity by Lunasin and Selected Cytokines

Published date: Jan. 24, 2017

## Technology description

Natural killer (NK) cells possess potent cytolytic activity against virus- or pathogen-infected cells and tumor cells. NK cells also modulate immune activity that contributes to excessive inflammation and autoimmune reactions, leading to diseases such as arthritis and allergies. However, the increased toxicity of cytokines in the high doses required for effective stimulation of NK cells prohibits systemic administration. Several strategies for the therapeutic use of NK cells have been proposed and tested. These attempts have had mixed results with risks of technical and safety concerns. This technology provides combination therapies that enhance immune system activities and responses.

**Cytokine and lunasin combination therapies enhance the cytokine's effect on the innate immune system for the treatment of cancer or an inflammatory disorder.**

The effective combination of lunasin with a cytokine synergistically enhances the cytolytic effect of the cytokine while decreasing systemic treatment toxicity. These compositions and methods of enhancement provide a more robust and properly-regulated immune response. The combination therapies can be used to enhance tumor clearance, decrease inflammatory and allergic reactions, and increase efficacy of cancer vaccines. Some example combinations function by augmenting NK's cytotoxicity against viruses and tumors, regulating NK mediated anti-allergic inflammation, producing potent NK cells for cellular therapy using adoptive transfer, or facilitating dendritic cells antigen presentation. Lunasin is readily available and easily obtained as it is present in soybeans and other natural products such as wheat.

## Publications

[Soypeptide lunasin in cytokine immunotherapy for lymphoma. Chang HC, Lewis D, Tung CY, Han L, Henriquez SM, Voiles L, Lupov IP, Pelloso D, Sinn AL, Pollok KE, de Lumen BO, Li F, Blum JS, Srivastava S, Robertson MJ. Cancer Immunol. Immunother. 2014 Mar;63\(3\):283-95.](#)

## Application area

- Combination therapies for cancer treatment
- Decreased inflammatory and allergic reactions
- Treatment for diseases of the innate immune system involving, interleukin 15 (IL-15), interleukin 18 (IL-18), and interleukin 21 (IL- 21)

## Advantages

- More effective, synergistically-enhanced treatments
- Lower cytokine dosage decreases toxicity

## Institution

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## Inventors

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