

Jurkat cells in culture—  
an immortalized line of  
T lymphocyte cells used  
to study a variety of cell  
responses, including  
those related to immune  
function.

# STUDYING THE EFFECT OF CONGAPLEX<sup>®</sup> ON T CELL RESPONSE

Paul R. Hanlon, Ph.D., et. al | Research and Development, Standard Process Inc.

Standard Process products have significant anecdotal support. For over 80 years we've focused on safe ingredients that have a strong pedigree of use. Cutting edge, quality research allows us to accumulate more information on our raw materials and final products with an overarching goal of helping patients. We are assembling a body of solid data to support how our products are used, and to define how they could work even better.

An example of this dedication to quality and research-supported efficacy is our recently published article examining the effect of Congaplex<sup>®</sup> on immune cell activity. We examined the effect of this product on cell cultures made up of T cells—immune system cells that respond to an immune challenge.\*



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## Background

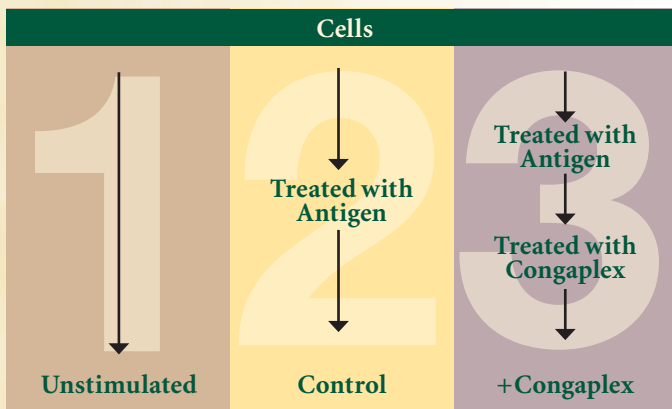
The human immune system comprises a variety of cells that protect the body. One category of cell is the T lymphocyte. These cells are made by bone marrow and travel to the thymus to mature, then can be found in the bloodstream and the tissue of the lymph system. There are many kinds of T lymphocytes and each has a specific role in immune response.

The human immune system is complex. Learning how this system reacts to outside stimuli is the first step in understanding whether the response will be positive or negative. Proteins, called cytokines, are released by different types of T cells and direct the actions of the immune system. Some substances can influence cytokine expression by T lymphocytes if the response from these cells is inadequate or exaggerated.

Mushroom, buckwheat, carrots, alfalfa, and glandular material have historically been used by complementary and alternative medical practitioners to support immune function. All of these ingredients are among those contained in Congaplex, which is often suggested for immune support.\*

## Design

In a series of experiments, Standard Process researchers pretreated a batch of immortalized (cells without normal limits on growth) T cells with Congaplex and then exposed them to a substance that would provoke an immune response (an antigen), and repeated it again with non-supplement supported cells. Cells were divided into 3 groups:

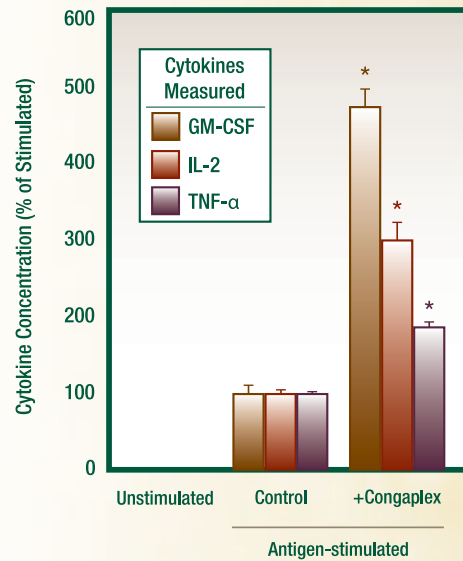


Then, researchers measured 3 cytokines (proteins that regulate the action of the immune system) that are released by T cells:

- ◆ Granulocyte-macrophage colony-stimulating factor (GM-CSF) is made by immune cells and stimulates stem cells to produce more immune cells
- ◆ Interleukin 2 (IL-2) is a cytokine that stimulates T cell response to an immune challenge
- ◆ Tumor necrosis factor-alpha (TNF-alpha) is released by immune cells that promote an inflammatory response (fever, swelling)

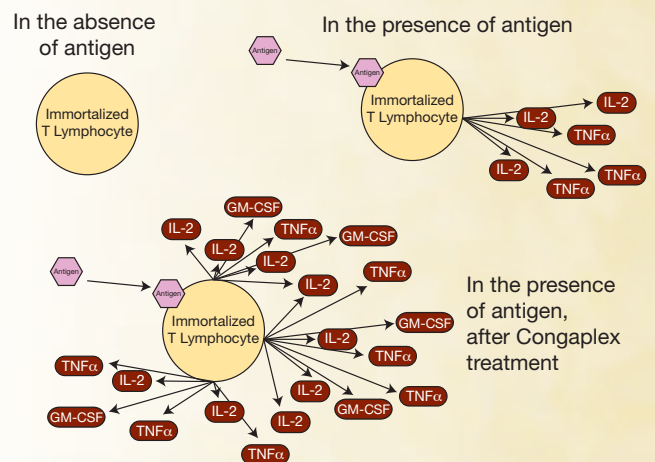
## Results

Our findings demonstrate the ability of Congaplex to affect one measure of immune activity (cytokines) in a cell culture model of T cell activity.



## Conclusions

Cytokine production increased in the cells supplemented with Congaplex. This can be a helpful attribute, especially when facing an immune challenge. In a crisis, one way that our immune cells communicate with each other is through cytokine production. They signal other immune cells and are a way to coordinate action when faced with a problem. The cytokines we measured are each associated with response to an immune challenge.\*



By examining Congaplex in this relatively simple model, researchers have gained more insight into how the product functions. Detailing our product's activities on one measure of immune activity in cell cultures is the first step in documenting how this product can be best used in more complex systems. To date, Congaplex hasn't been formally researched in the human body, and more studies are needed.