Technical White Paper: How 4Life Transfer Factor® Can Modulate the Immune System and T Cell Activity

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Objective

This study assessed the effects of 4Life Transfer Factor on T Helper cells from people who had either taken transfer factors or who had not.

Background

Transfer factors were discovered decades ago, and their effects on immune system function are well documented. However, little is known about how these small proteins affect the function of individual immune system cells.

Recent developments in cellular separation use small magnetic beads to separate a single type of immune system cell from whole blood. This allows for an unprecedented look at how transfer factors can affect the function of a single cell type.

Utilizing this technology, we assessed the effects of 4Life Transfer Factor on the activity of isolated CD4 Helper T cells from healthy donors. Helper T cells help coordinate overall immune system response. These cells do not attack invaders; they attract other immune system cells to the site of invasion.

Experimental Methods

This experiment used an FDA-approved diagnostic test (ImmuKnow®) to examine the effects of isolated CD4 Helper T-Cells incubated with 4Life Transfer Factor.

We collected blood via venipuncture from healthy individuals. This blood was added to a 96-well plate. Various test substances and phytohemagglutinin (PHA), an immune system stimulant, were added to specific wells and the whole plate was left to incubate overnight in a controlled environment.

After incubation, the magnetic microbeads were added to the wells and mixed. Using powerful magnets, the Helper T cells were removed from the blood and washed. The magnets were then removed.

The Helper T cells were then broken open and their content of ATP measured. ATP provides an indication of how active the cells were. The PHA-induced activity of Helper T cells differs between people taking transfer factors and those who have not taken transfer factors.*

Results

ATP levels were significantly different for many of the groups (see Figure 1). PHA controls are the samples where just PHA was added. Those who were taking 4Life Transfer Factor showed a reduced response to PHA with every concentration of 4Life Transfer Factor that was tested. Those who were already taking 4Life Transfer Factor showed a greater calming effect than those who had never taken 4Life Transfer Factor.*

Comparisons between 4Life Transfer Factor-consumers and non-4Life Transfer Factor-consumers at the same transfer factor concentrations showed significant differences at the two higher concentrations. Every well had PHA added to stimulate ATP production. In some wells 1 mg of 4Life Transfer Factor was

added, others got 5 mg, and a third set got 10 mg. The low concentration group was the 1 mg, and the high concentration was the 10 mg. The two higher concentrations were also significantly different from the lowest concentration among TF-consumers.*

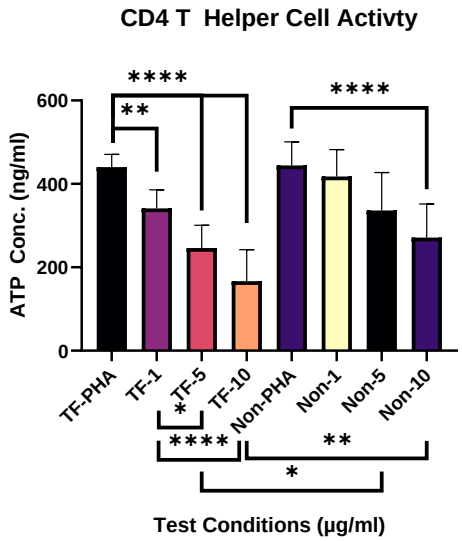

Figure 1. ATP concentrations with different test conditions. Abbreviations: TF = 4Life Transfer Factor consumer, PHA = Phytohemagglutinin, non = 4Life Transfer Factor non consumer. Numbers represent the additional 4Life Transfer Factor added to the wells (e.g. 1 = 1 mg). * = <0.05 (< 5% chance these differences happened by chance) ** = <0.01 (< 1% chance these differences happened by chance) **** = <0.0001 (< 0.01% chance these differences happened by chance)*

Conclusion

ATP production is a good measure of overall cellular activity. This experiment looked at the effects of a non-specific immune system cell stimulant, PHA, on the ATP levels of CD4 Helper T cells obtained from healthy individuals who were either currently taking a 4Life Transfer Factor supplement or had never taken such a supplement.*

In general, increasing concentrations of 4Life Transfer Factor led to reduced ATP levels in both groups, more so in those already taking 4Life Transfer Factor. This reduction in ATP is interpreted as being a calming response to a non-threat. PHA dramatically increases immune system cell activity, though it is not an actual immune system challenge. In other words, this increase in activity is at least somewhat misdirected and excessive. The addition of transfer factors, either via consumption or addition, appears to diminish this overreaction.*

In summary, this preliminary *ex vivo* study provides evidence that 4Life Transfer Factor can reduce an overactive immune system response and that prior consumption of 4Life Transfer Factor molecules can further improve modulatory response.*

*These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.