

ABSTRACT

To more clearly understand the effects of **Ganogen**[®] on the human immune system, a nutritional beverage enriched with the bioactive compound **Ganogen**[®], (Beta-glucans and Ganoderic acids derived from the *Ganoderma lucidum* mushroom (Reishi)), was administered to a population of 52 children ages 3-5 years for a period of six (6) weeks.

To establish specific immune system function benefits of **Ganogen**[®], it was necessary to measure key immune system markers in the blood: Leukocytes, T Lymphocytes CD4 helper cells (LT CD4), Cytotoxic T Lymphocytes (CD8), and Natural Killer (NK) Cells. Blood samples were evaluated immediately prior to, and upon completion of the 12 week test period

RESULTS

Leukocytes

Leukocytes play a vital role in the human immune system, each different type dedicated to a specific function in protecting against diseases and infections. As is evident in the graph to the right (**Fig 1**), after consuming the beverage containing **Ganogen**[®] for just six (6) weeks, the children in the study population experienced a mean increase in the measured level of leukocytes on the order of 10% (8853 cells/ μ L to 9715 cells/ μ L, p 0.013).

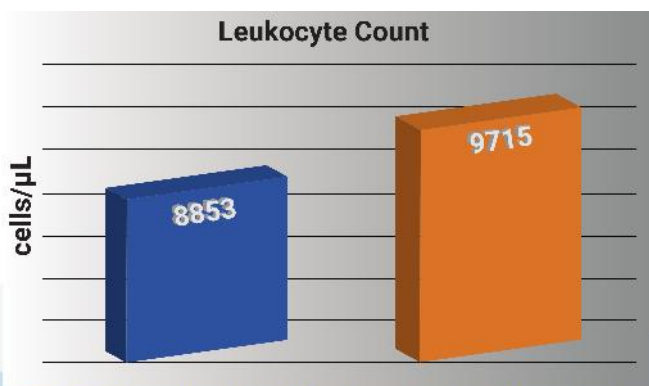


Fig 1. Mean levels of Leukocytes; initial vs final.

Lymphocytes CD4 + T-Helper Cells

The study demonstrated an increase in the level of CD4 T-Helper Cells of 8.2% after just six (6) weeks of consuming **Ganogen**[®] (1498 cells/ μ L to 1622 cells/ μ L, p 0,046). These results are significant as CD4 T-Helper Cells are responsible for promoting antimicrobial function of other immune cells, such as antibody producing B Lymphocytes and Macrophages which play an important role in combating pathogenic microorganisms. (**Fig 2**)

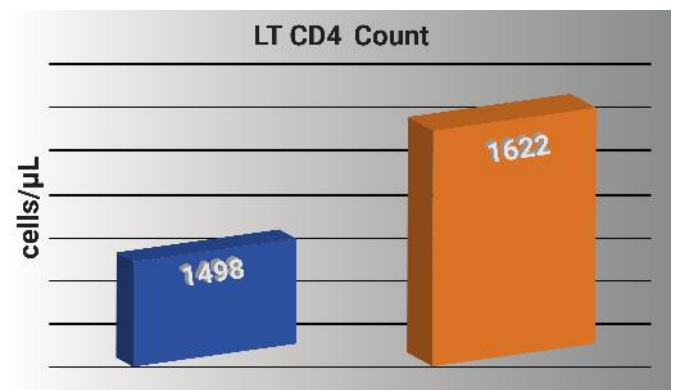


Fig 2. Mean levels of Lymphocytes CD4 T-Helper Cells; initial vs final.

Cytotoxic T Lymphocytes (CD8)

Cytotoxic T Lymphocytes (CD8) are responsible for eliminating infected cells and improve response to viral pathogens and are also known to be responsible for the control and removal of cancer cells. The study demonstrated an 19.2% increase in the mean level of these vital immune system cells, from 958 cells/ μ L to 1142 cells/ μ L, (p 0,012), as illustrated below. (**Fig 3**)

Effects of Ganogen[®] in children

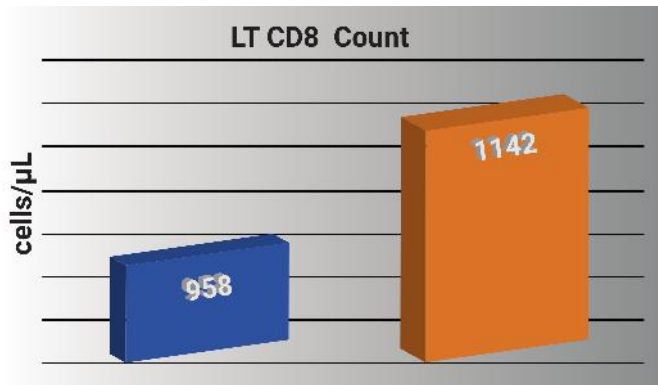


Fig 3. Mean levels of LT CD8; initial vs final.

Natural Killer (NK) Cells

Natural Killer (NK) Cells play an important role in controlling several types of tumors and microbial infections by limiting their spread and subsequent tissue damage as well as aiding with inflammatory and autoimmune disorders. The study demonstrated an increase in the Natural Killer (NK) Cells count of 86%, 230 cells/μL to 429 cells/μL, after just 6 weeks of consuming the **Ganogen[®]** enriched beverage. (Fig 4)

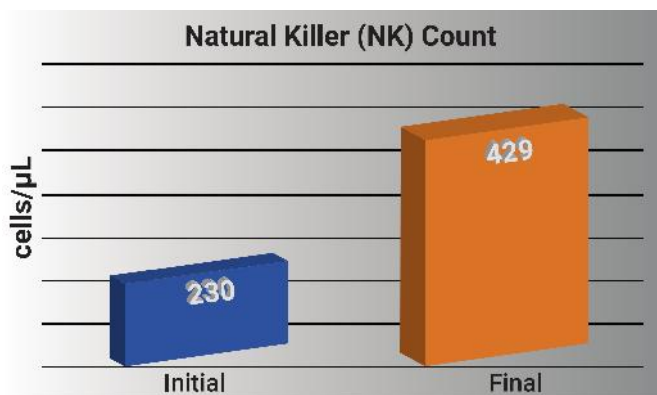


Fig 4. Mean levels of NK; initial vs final.

CONCLUSIONS

This study strongly suggests that a regimented consumption of foods or beverages enriched with **Ganogen[®]**, will result in increased levels of important immune system markers in children, such as; Leukocytes, T Lymphocytes CD4 (T-Helper Cells), T Lymphocytes CD8, and Natural Killer (NK) Cells.



These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.



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