

# Enriched nutritional beverage significantly increases levels of key immune system markers in elderly adults



## ABSTRACT

In an attempt to more clearly understand the effects of **Ganogen**<sup>®</sup> on the human immune system, a nutritional beverage enriched with the bioactive compound **Ganogen**<sup>®</sup> (Beta-glucans and Ganoderic acids derived from the *Ganoderma lucidum* mushroom (Reishi)), was administered to a population of 47 elderly adults ages 65-85 years, for a period of 12 weeks.

## RESULTS

### Immunoglobulin A (IgA)

As shown in (Fig 1) below, statistically significant increases in the mean concentration levels of the immune marker Immunoglobulin A, were evident (286.7 mg/dl to 306.0 mg/dl, p 0.001). This type of antibody is useful in confirming the degree of immunomodulation triggered by **Ganogen**<sup>®</sup> as it is the initial defense to identify pathogens and help prevent further proliferation into the body.

### 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 revealed an 18% increase in the mean level of these vital immune system cells from 574 to 676 cells/ $\mu$ L, (p 0.038), as illustrated below. (Fig 2)

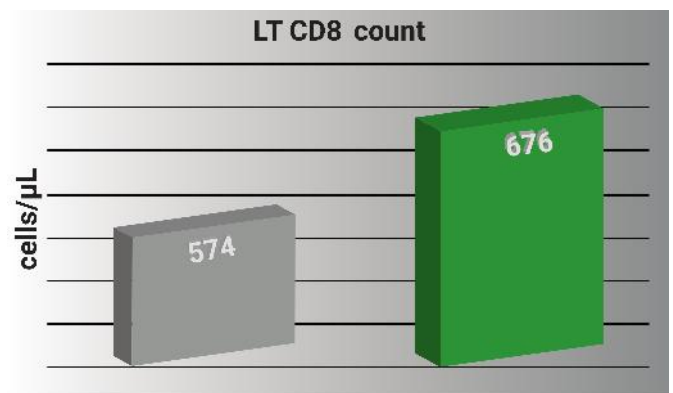


Fig 2. Mean levels of LT CD8 ; initial vs final.

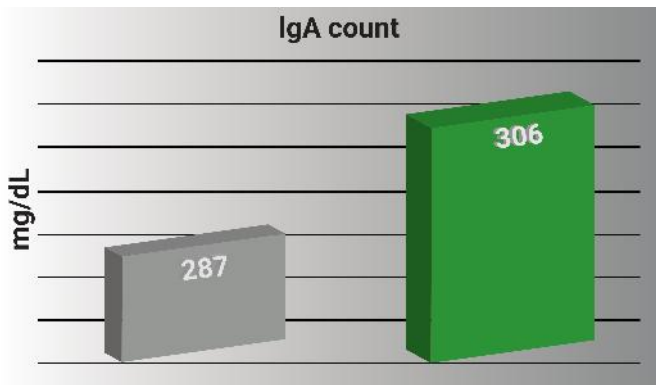


Fig 1. Mean levels of Immunoglobulin A ; initial vs final



# Effects of Ganogen® elderly

## 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. After just 12 weeks of consuming the **Ganogen®** enriched beverage, an increase of 21% in the mean count of NK Cells was measured, 318 cells/ $\mu$ L to 385 cells/ $\mu$ L, (p 0.044). (Fig 3)

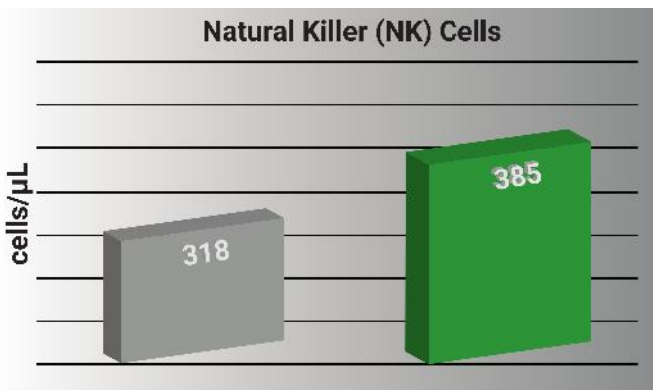


Fig 3. Mean levels of Natural Killer (NK) Cells; initial vs final.

## Total Lymphocyte Count

The study revealed an overall increase in the total mean Lymphocyte Count of 2319 cell/ $\mu$ L to 2536 cells/ $\mu$ L (p 0.037)(Fig 4). Lymphocytes are major players in the immune system, destroying harmful cells and activating other immune cells, while creating memory logs to combat future threats. This increase in total Lymphocyte count is directly related to increases given in Natural Killer (NK) Cells and Lymphocytes CD8 (Fig 2 and 3 above)

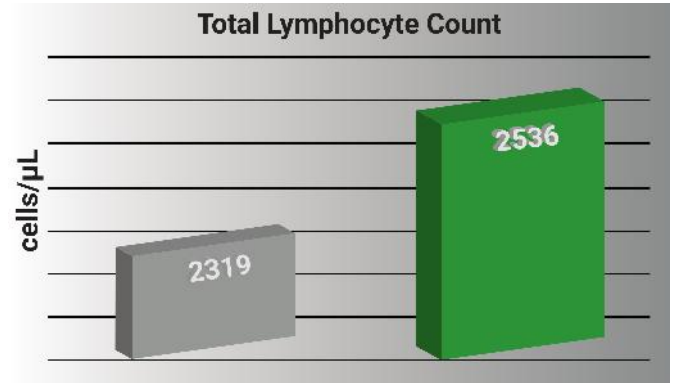
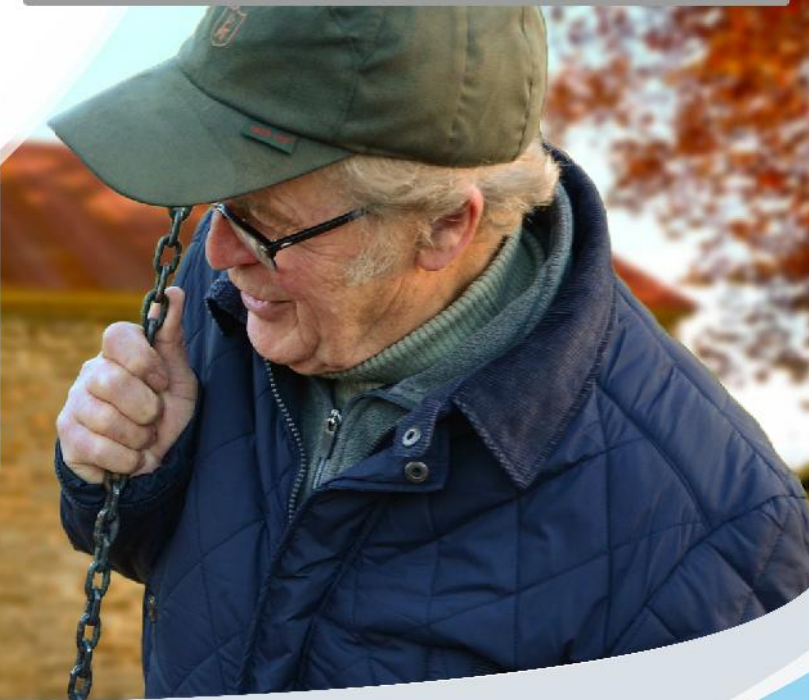


Fig 4. Total Lymphocyte Count; initial vs final.

## 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; Immunoglobulin A (IgA), T Lymphocytes CD8 Natural Killer (NK) Cells, and the overall level of Lymphocytes in the blood.

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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