FLOW CYTOMETRIC ANALYSIS OF THE TH1-TH2 SHIFT IN ALLERGIC INDIVIDUALS USING MODUCARE™ (STEROLS/STEROLINS)

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INTRODUCTION:

T lymphocytes play a central role in the immune response to protein antigens. The secretion of lymphokines determines the final outcome of the response: the functional dichotomy can be classified as either a TH_1 or a TH_2 type response depending on the type of lymphokine secreted by the activated CD4 cells: IL-2 and IFNγ are secreted by TH_1 CD4 cells while IL4, IL10, among others are secreted by TH_2 CD4 cells. Unfortunately, no membrane markers are currently available to differentiate between these 2 types of CD4 cells. It has been reported that allergic individuals display an abnormally elevated TH_2 profile hence explaining their elevated IgE levels and symptoms of allergies.

AIM:

To determine whether the balance between TH_1 and TH_2 CD4 cells differs between allergic and non-allergic individuals. Also, to assess the effects of 4 weeks of therapy using Moducare™ on the secretion of the lymphokines between the groups.

METHODS:

Peripheral blood lymphocytes were prepared by density gradient centrifugation and cultured in RPMI 1640 medium containing FCS. The cells were activated with PMA and Ionomycin in the presence of Brefeldin A and subsequently fixed and permeabilised with a commercial solution. The intracytoplasmic cytokines were detected with conugated monoclonal antibodies specific to IFNγ or IL4. Analysis of the cells was conducted with a FACScan flow cytometer. Statistical analysis was conducted using the Wilcoxon Rank paired test.

Four groups were followed: allergic persons were given either placebo or active sterols/sterolins capsules and the lymphokine profile was determined at baseline and again 4 weeks later. A group of non allergic persons serving as controls was similarly formed and the assignment to each sub-group was blinded.

RESULTS

It was shown that allergic persons exhibited significantly raised IL4 containing CD4+ cells at the start of the study when compared to the non-allergic control group. The intake of Moducare™ induced a significant decrease in IL4 in both allergic as well as in the control groups. It was interesting to note that, unlike the allergic persons, the non-allergic controls receiving the sterols/sterolins capsules increased their IFN-γ CD4+ cells after 4 weeks of therapy.

CONCLUSIONS:

The TH_1-TH_2 response in allergic individuals appears perturbed when compared to that of healthy, non-allergic controls. The preparation of sterols/sterolins appears to decrease the synthesis of IL4 in allergic persons as well as in healthy controls. The fact that the allergic persons did not increase their ability to synthesize IFN-γ may be due to a post-transciptional or genetic abnormality in the synthesis or release of this regulatory lymphokine.