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Effect of lymphokines on bioluminescence activity of polymorphonuclear granulocytes

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We tested the effects of lymphokines on the respiratory burst of normal PMN cells induced by PHA or opsonised Zymosan [3]. The mononuclear cells were prepared from patients with Graves' disease and controls. The production of lymphokines was carried out by Urist's method [4] in the presence of PPD, PHA and human thyroid membrane antigens (Table I). It was found that: 1. The lymphokines produced significant inhibitory and stimulatory influence on the respiratory burst of normal PMN cells [1]. PHA showed inhibitory effect on normal PMN cells after treatment with the lymphokine induced by human thyroid membrane

TABLE I

Study of the effects of lymphokines on respiratory burst of normal PMN cells with LKB 1250 luminometer

100 μl lymphokine[1]	+	100 μl luminol (10^{-3} M)
10 glass beads +		+ Normal PMN cells (3×10^6 cells in 100 μl)
Photoemission was measured after adding normal PMN cells (3×10^6 cells in 200 μl)	←	→ Photoemission was measured after adding 100 μl PHA (20 μg/ml) or 100 μl opsonised Zymosan (20 mg/ml)

Calculation of bioluminescence activity index

$$\text{Bioluminescence}^2 \text{ activity index} = \frac{A^3 - B^4}{B} \times 100$$

[1] Production of lymphokines induced by different antigens by urist's method. Dilution of antigens used to exclude aspecific antigen effect was measured parallel with the lymphokines.

[2] Negative values demonstrate the inhibitory effect of lymphokines (cytokines) in the adherence of normal PMN cells to glass beads.

[3] Value of „A" was calculated as $\left[\text{value with antigen-induced lymphokine} / \text{value with dilution of antigen}\right] \times 100$

[4] Value of „B" was calculated as $\left[\text{value with PRS-induced lymphokine} / \text{value with PRS added}\right] \times 100$

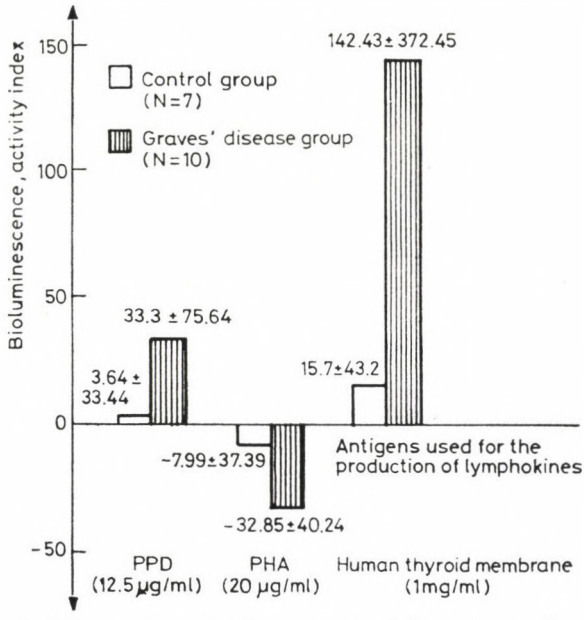

FIG. 1. The effects of different lymphokines prepared from control's and Graves'lymphocytes on the respiratory burst of normal polymorphonuclear cells induced by opsonised Zymosan

antigen in graves'lymphocytes. The lymphokine induced by human thyroid membrane antigen had stimulating effect on the respiratory burst of normal PMN cells induced by opsonised Zymosan (Fig. 1). 2. This phenomenon may be important in the pathogenesis or the different stages of thyroid disorders of autoimmune origin [2]. The exact classification of lymphokines responsible for the observed phenomenon requires further analysis.

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