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B CELL DIVISIONS IN T CELL DEPENDENT B CELL REACTION

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In the study of T and B cell interaction, T helper cell plasma membranes could induce B cell activation and IL-4 played a central role in B cell proliferation and IgM, IgG₁, and IgE secretion. IL-5 had a synergistic effect on Ig secretion. The Ig secretion of IgM and IgG₁ increased significantly at 2nd day of culture and IgE at 3rd day of culture.

B cells were cultured with T cell plasma membranes and IL-4 after B cells were stained with carboxy fluorescein succinimydyl ester (CFSE), diluted two fold with each consecutive cell division, to study the relationship between B cell division cycles and Ig secretion. The first cell division occurred at 48h culture and continued to divide more than 10 times at day 5 culture. The elispot experiment results suggested that activated B cells required at least 2 times cell division cycle to secrete IgM. But it required at least 3 times cell division for each of B cells to secrete IgG₁ and 4 times for IgE.

In conclusion, these results suggested that the isotype switching of IgM, IgG₁ and IgE secretion correlated with the cell division cycle numbers rather than the duration of B cell culture.

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HUMAN B LYMPHOCYTE DIFFERENTIATION WITH THE VARIOUS STIMULATION OF T LYMPHOCYTES

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Human B lymphocytes differentiate into immunoglobulin secreting cells when stimulated with differentiation inducing factors produced by T lymphocytes either with antigenic or with mitogenic stimulation. Along with the past studies of B lymphocyte differentiation, we found that many natural products, as well as defined mitogens, could stimulate T lymphocytes to produce B lymphocyte inducing factors including IL-6. We have tested microbial cells and cell components, by-products, and extracts of natural products described in the prescription of traditional folk medicine. We have also been interested in the mechanism of signal transduction inside cytoplasm after T lymphocyte stimulation. The signal transduction pathways could be different with the different stimulation of T lymphocytes. When intracytoplasmic calcium influx was checked, the novel protease obtained from *Sarcodon asproatus* induced immediate and strong increase calcium influx inducing B lymphocyte differentiation. Fractions of deer antler extract also dramatically induced B lymphocyte differentiation without any additional stimulation implying that it may have IL-4, IL-5 and IL-6 like activities. Differentiation inducing mechanisms with other stimulation are under investigation at the moment.