STUDIES ON SEPARATION OF GLYCOLIPID ANTIGENS AND MEASUREMENT OF ANTIGEN SYNTHETIC ENZYMES FROM LYMPHOID CELL LINES DERIVED FROM DIFFERENT P BLOOD GROUP PHENOTYPE PERSONS

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Blood group P antigen (globoside, GalNAc (β1, 3) Gal (α1, 4) Gal (1, 4) Glc-Cer) and P^k antigen (CTH, Gal (α1, 4) Gal (β1, 4) Glc-Cer) are major glycolipid antigens in the human P blood group system. P^k phenotype persons do not express P antigen on the erythrocyte membrane, while p phenotype persons express neither P^k antigen nor P antigen. We examined the cause of the above expressed genetic phenomena by investigating the deficiency of the glycolipid antigen synthetic enzymes.

The enzyme preparations were obtained from lymphoid cell lines of different P blood group phenotypes estarblished by *in vitro* transformation with Epstein-Barr virus. The glycolipid pattern of these obtained lympoid cell lines was examined. The result shows that P^k cells lack globoside while p cells lack both globoside and CTH. These results are favorably comparable with those reported previously for the antigens on the erythrocyte membrane.

Globoside-Synthetic enzyme was determined by using CTH and UDP-[^{14}C] GalNAc as substrates. Globoside-Synthetic enzyme could not be detected in all of the phenotype cell lines, becase a large quantity of [^{14}C]-GalNAc was transfered into the endogeneous protein containing the enzyme preparations from UDP-[^{14}C] GalNAc.

CTH-Synthetic enzyme was determined by using Lactosyl ceramide and UDP-[^{3}H] Gal as substrates. CTH synthesis was detected in both normal and P^k cells but not in p cell. We, therefore, concluded that p cell lacks both CTH and globoside due to the deficiency of CTH synthetic enzyme.