SUMMARY

Part I

The relative percentage of globin synthesis *in vitro* in protein-calorie malnutrition children was studied. Bone marrow cells from these patients were cultured with $^{14}C$-leucine. The non-globin and globin chains were separated by CM-cellulose chromatography. It was demonstrated that the percentage of globin synthesis in the three groups of PCM children, kwashiorkor, marasmic-kwashiorkor, and marasmus, were similar on hospital days 2, 29 and 50, but was slightly increased on hospital days 8. The globin synthesis on the hospital day 29 and 50 did not differ significantly from that on hospital day 2. The result indicated that there was no change in the relative amount of globin synthesis in the bone marrow of PCM children *in vitro* caused by the disease. The $\alpha/\beta$ globin chain ratio seemed below normal on admission and to return to normal by day 29.

Part II

The percentage of globin synthesized by bone marrow cells from experimentally starved and protein-deprived rats was studied. The results indicated that the *in vitro* globin synthesis in both the protein-deprived and the starved rats, was significantly decreased from that in normal rats. Re-proteinization resulted in a rapid increase in the percent globin synthesized, which returned to normal value within three days.
Part III

Globin synthesis in reticulocytes of \( \alpha \)-thalassemia patients was analyzed. It was found that there was no \( \alpha \)-chain synthesis in the cells of the (\( \alpha_1 \alpha_1 \)) hydrops foetalis. The \( \alpha / \beta \) ratio was found to be low in both parents of all hydrops foetalis cases. It was demonstrated that \( \alpha \)-chain synthesis was always less than \( \beta \)-chain synthesis in patients with Hb–H disease. The \( \alpha / \beta \) ratio in one spouse of the parents of Hb–H patients was always low in \( \alpha \)-chain synthesis and was considered to carry the \( \alpha \)-thalassemia trait, while that in the other spouse was not different from normal value.
BIOGRAPHY

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