SUMMARY

Nature, composition and synthesis of lipids have been studied in addition to phosphate esters, nucleotides and proteins in the blood of patients with chronic myeloid leukemia and of normal controls with the following results:

Chapter 1

Lipids:

1. Study of the total lipid, its fractional composition, fractional composition of phospholipids, fatty acid components of neutral and phospholipids indicate that total lipid content of both normal and leukemic blood are not markedly different. But, when the comparisons are made in regard to respective components, leukemic leukocytes show much higher lipid content than that of normal control while the normal erythrocytes have higher lipid content and the plasma lipids are the same in both the cases.

2. Leukemic leukocytes show considerably higher phospholipid contents than that of normal. The saponifiable lipid is however greater in normal leukocytes.

3. The triglyceride content in leukemic plasma is greater than in normal one, while the levels of other fractions show a slight increase in the normal plasma than in the leukemic case.
4. Fractional composition of phospholipid shows that lecithin content is more than double in leukemia and sphingomyelin is also higher in leukemia. Other fractions except inositide show a significant increase in normal case.

5. A few unidentified phospholipids and fatty acids from phospholipids have been found to be present in leukemic leukocytes. Two unidentified fatty acids have been found to be present in leukocytes from leukemic saponifiable lipids.

6. In vitro uptake of $^{14}$C from acetate-$1-^{14}$C and stearate-$1-^{14}$C have been carried out. Synthesis of lipids and particularly phospholipids are markedly higher in leukemia leukocytes while that of triglycerides the value is higher in normals.

7. Incorporation of $^{32}$P into leukocyte phospholipids is higher in leukemia than that in normal controls.

8. $^{14}$C Yield and percentage of radiochemical yield in the respired CO$_2$ are much higher in leukemia, when incubated with acetate-$1-^{14}$C, than those of normals.

9. Work with subcellular fractions of leukocytes reveals that total lipid content is higher in leukemic mitochondria than that of normal controls.

Both mitochondria and microsomes of the leukocytes appear to be responsible for the higher synthesis of lipids,
but in mitochondria more active synthesis of lipid takes place in leukemia.

**Chapter II**

**Phosphate esters**

Levels of ATP, HDP, 3-PGA, TP, PEP and G-6-P are significantly higher in leukemia while that of G-1-P is significantly lower in leukemia when compared with that of normal controls.

**Chapter III**

**Nucleotides**

The levels of uric acid, AMP, NADP, UTP, GTP, ATP and ADP excepting NAD are significantly higher in leukemia, while NAD is significantly lower in leukemia than in normal controls.

**Phosphorus content**

Both inorganic and total phosphorus contents are higher in leukemia than that of normals.

**Chapter IV**

**Proteins**

Albumin content in leukemia is lower while globulins,
\( \alpha_1, \alpha_2 \) and \( \gamma_2 \) are higher in comparison to normal and the total protein contents of whole blood, erythrocytes and plasma are also significantly lower in leukemia.