METABOLISM OF ^{131}I-ALBUMIN DURING EXPERIMENTAL PROTEIN DEPLETION AND REPLETION*

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Studies with ^{131}I-albumin have been performed in 8 human subjects on control diets and after periods of low-protein and high-protein feeding. Methods of albumin fractionation and iodination have been described elsewhere.[1] Data have been analysed by the 'equilibrium time' method[2] and by that described by Matthews.[3]

Results indicate that a low-protein diet causes more shrinkage of the extravascular albumin pool than of the intravascular pool. It is suggested that a fall in the serum-albumin level may not occur until considerable depletion of the extravascular pool has taken place. In response to the low-protein diet there is a marked fall in the catabolic rate of albumin. This and the diminution in albumin pool-mass is reversed by high-protein feeding.

Figures derived for albumin synthesis plus net rate of transfer into the intravascular pool show a fall following protein depletion, which is of the same order as the fall in catabolic rate. This explains our finding that the intravascular albumin pool does not change significantly after changes in dietary protein. The fall in synthesis plus transfer rate cannot be attributed to fall in transfer rate alone, and the assumption must be made that a true drop in albumin synthesis follows dietary protein depletion. This probably reflects a lowering of supplies of amino acids.

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REFERENCES

1. Hoffenberg, R., Saunders, S., Linder, G. C., Black, E. G. and Brock, J. F. *in* Gross, F. ed. (1962): *Protein Metabolism. An International Symposium*, p. 314. Heidelberg: Springer-Verlag.
2. Matthews, C. M. E. (1957): Phys. in Med. Biol., **2**, 36.
3. *Idem* (1961): J. Clin. Invest., **40**, 603.