Literature Briefs

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Briefs were submitted by Drs. John Adriani, C. M. Ballinger, Norman Bergman, P. P. Bosomworth, Gaylord Buchanan, M. T. Clarke, H. S. Davis, Deryck Duncalf, Martin Helrich, J. J. Jacoby, S. J. Martin, Alan Randall, H. S. Rottenstein, P. H. Sechzer, and James Sullivan. Briefs appearing elsewhere in this issue are a part of this column.

The Briefs of Russian Literature were taken from Excerpta Medica's *"Abstracts of Soviet Medicine," which is supplied through the Public Health Service of the National Institutes of Health.*

STEADY STATE The rate of tissue metabolism, uptake or release can be measured by multiplying blood flow by arterio-venous difference only if flow is constant, arterial concentration is constant, and rate of tissue metabolism is constant. A further restriction is that if venous concentration is not identical in all veins draining the tissue, the venous concentration used must be weighted by the relative contribution to total flow made by the bed drained by the vein sampled. If flow varies there does not appear to be any reliable way to interpret the data. Increase in flow will probably lead to an overestimate of the tissue uptake and a decrease in flow to an underestimate. This eliminates the possibility of using arterio-venous differences to measure metabolism when flow varies. The effect of the state on simultaneous arterio-venous differences means that a solitary arterio-venous difference is uninterpretable. The immediate history of the system must be known. A single pair of arterio-venous differences determined simultaneously on two substances passing through the same bed is also not properly useful for comparing the relative metabolism of the two substances unless it is known that the distributions of their transit times are identical. (*Zierler, K. L.: Theory of Arteriovenous Concentration Differences for Measuring Metabolism in Steady and Non-steady States, J. Clin. Invest. 40: 2111 (Dec.) 1961.*)

OXYGEN TOXICITY Mice adapted to living in an environment containing 10 and 20 per cent carbon dioxide were more resistant to the convulsant effect of oxygen at six atmospheres than were untreated mice. These findings substantiate the theory that oxygen at high pressures allows demands of the tissues to be met by oxygen in physical solution in the plasma. Hemoglobin remains nearly fully saturated; autointoxication occurs for a lack of transport of carbon dioxide by reduced hemoglobin. (*Walker, I. G.: Involvement of Carbon Dioxide in Toxicity of Oxygen at High Pressure, Canad. J. Biochem. 39: 1803 (Dec.) 1961.*)

CATION TRANSPORT The transport of cations across the red cell membrane against an ionic gradient at 37° C. is an active process controlled by the metabolic activity of the cell, the movement at 4° is a passive process and occurs with the gradient. When the temperature of cold-preserved blood is returned to 37° a movement of sodium and potassium occurs across the red cell membrane against the respective ion gradients. The rate and extent of this active ion transport appears to be directly related to the increase in metabolic activity, particularly phosphate metabolism. Inosine, which in contrast to glucose can readily be metabolized, induced a pronounced esterification of inorganic phosphate uptake of potassium, and expulsion of sodium. (*Blostein, R., Rubinstein, D., and Denstedt, O. F.: Relation Between Phosphate Metabolism and Transport of Cations Across the Cell Membrane in the Human Erythrocyte, Canad. J. Biochem. 39: 1879 (Dec.) 1961.*)