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Letter to the Editor

Determination of Serum Retinol in Cancer Studies

HAZEL TYLER and J. W. T. DICKERSON
Division of Nutrition and Food Science, Department of Biochemistry, University of Surrey, Guildford, Surrey GU2 5XH, U.K.

THOMPSON [1] recently drew attention to the interference from carotenoids in the fluorimetric assay of serum retinol. Work in our laboratory has confirmed that high serum carotenoid concentrations interfered in this assay (unpublished data). However, serum retinol determined fluorimetrically was highly significantly correlated with retinol-binding protein (RBP), the serum transport protein for retinol [2, 3]. Thus values derived by simple fluorimetry do, at least in part, reflect serum retinol.

Measurement of serum retinol alone, even by the most specific method, provides little information on the cause of low levels because serum retinol concentrations are not strongly influenced by dietary retinol intake [4]. A low serum retinol concentration may occur in true vitamin A deficiency or in conditions in which there is low mobilisation from liver stores such as liver disease [5] and protein energy malnutrition (PEM). In PEM serum concentrations of both components of the retinol transport system, namely RBP and prealbumin, are reduced. Administration of protein and energy without vitamin A causes a rise in serum retinol, RBP and prealbumin levels in patients with PEM [6].

Advanced cancer is often associated with anorexia, weight loss and cachexia [7]. This is further exacerbated by therapeutic approaches [8]. It is therefore possible that low serum retinol concentrations in patients with cancer are not related to retinol status *per se* but to protein energy balance. The concentrations of RBP and prealbumin in serum are independently regulated [9]. Thus in true vitamin A deficiency serum prealbumin levels remain normal whilst RBP levels are low.

We agree with Thompson [1] that, where feasible, the method of choice for determining serum retinol is HPLC, but we further advise investigators considering research on blood levels of retinol in patients with cancer to measure both RBP and prealbumin in addition to serum retinol in order to ascertain the biological significance of the differences observed.

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