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Red Blood Cell Volume and Glycaemic Control in Diabetes

Dear Sir,

The occurrence of an increased mean red cell volume (MCV) in diabetes, not correlated with glycosylated haemoglobin (HbA_1), has been reported by Davidson et al. [1]. This finding has been recently questioned by Beautyman [2], who observed that severe hyperglycaemia may cause inaccuracy in automated measurement of corpuscular indices [3].

We investigated MCV, blood glucose, stable HbA_1 and glycosylated serum proteins (which measure long- and short-term control respectively [4] in 50 healthy subjects and in 50 diabetic patients matched for age and sex (Table 1). An increased MCV in the diabetic patients (90 ± 5.87 versus 87.87 ± 3.54 fl, mean $\pm$ SD; $p < 0.05$) and a linear correlation between MCV and serum glycosylated proteins ($r = 0.42$, $p < 0.01$) were observed. The lack of correlation between MCV and stable HbA_1 and the good correlation with glycosylated proteins suggest that short-term metabolic control may influence MCV in diabetes.

Moreover, as the methods for measurement of stable HbA_1 and glycosylated proteins were not affected by free serum glucose (both methods, by dialyzing samples, remove labile glucose adducts [5, 6], our data provide further evidence that changes in glycaemic control in diabetes may lead to haematological alterations, such as polycythaemia [7] and increased reticulocyte counts [8].

Table 1. Red blood cell volume and indices of diabetic control

	Control Subjects ($n = 50$)	Diabetic patients ($n = 50$)
Age (years)	40 ± 7.8	41 ± 7.0
Sex (M:F)	25:25	25:25
Blood glucose (mmol/l)	4.95 ± 0.45	9.85 ± 0.74
Stable HbA_1 (%)	6.23 ± 0.68	10.18 ± 1.70
Glycosylated serum proteins (HMF[a] nmol/mg protein)	0.64 ± 0.26	0.95 ± 0.42
Mean corpuscular volume (fl)	87.87 ± 3.54	90 ± 5.87

Data are expressed as mean ± SD; [a] HMF = Hydroxymethylfurfural

Yours sincerely,

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Book Reviews

J. C. Brown. Gastric Inhibitory Polypeptide (Monographs on Endocrinology). Berlin, Heidelberg, New York: Springer 1982. 32 figs, pp 88, hardback DM 68.00/US $ 30.20. ISBN: 3-540-11271-5

J. C. Brown, the discoverer of gastric inhibitory polypeptide presents a monograph on this hormone. This book tells in a concise form the story of the analysis of an observation leading to the discovery of a new hormone. The first section covers the problem of enterogastrone and incretin, two physiological principles, which, at least in part, are believed to be related to gastric inhibitory polypeptide (GIP). In section two, the chemistry of GIP is described together with the recent correction of the amino acid sequence. Modern separation and isolation techniques are presented and details on the biological activity of synthetic fragments of GIP are given. Chapter three describes the physio-