



Comparison of 3 automated assays for total vitamin B₁₂ with measurement of Holotranscobalamin as a marker for vitamin B₁₂ deficiency

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Background :

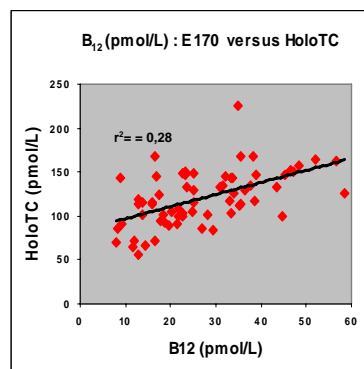
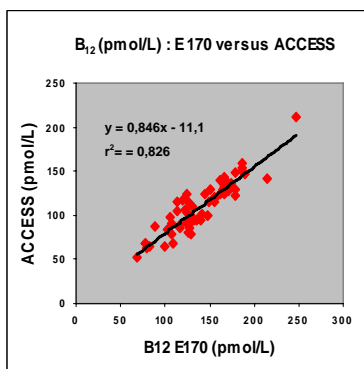
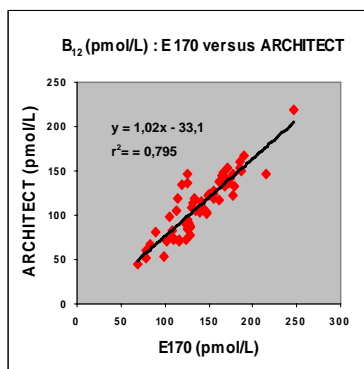
Automated vitamin B₁₂ assays are currently used to determine the serum vitamin B₁₂ concentration as a clinical marker for vitamin B₁₂ deficiency. The vitamin B₁₂ bound to transcobalamin (HoloTC) represents the biologically available fraction of total vitamin B₁₂ for uptake by cells and therefore has been proposed as a potentially useful marker of vitamin B₁₂ status.

Methods :

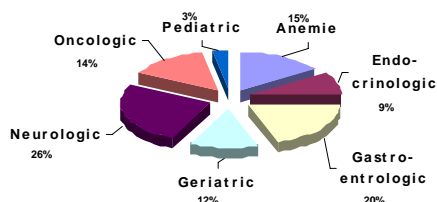
Vitamin B₁₂ was measured by 3 automated assays (Roche Modular Analytics E170, Abbott ARCHITECT and Beckman-Coulter Access) in 65 patients (58,5% females; age range, 14 – 92 years) with vitamin B₁₂ concentrations lower than 247 pmol/L. Serum samples of these patients were also analyzed for HoloTC by RIA (HoloTC RIA; Axis-Shield).

Results :

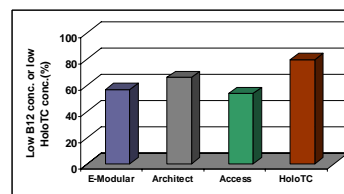
In this low concentration range of vitamin B₁₂ (< 247pmol/L, the slope of regression of the ARCHITECT and Access against Roche E170 assay was respectively 1,02 (intercept of -33,1) and 0,846 (intercept of -11,1) and r² of 0,795 and 0,826. There was a poor correlation between vitamin B₁₂ and HoloTC.



Based on hematologic values, 10 of 65 patients were identified with megaloblastic anemia. All of them had HoloTC levels lower than 30 pmol/L, whereas one patient (HoloTC = 9 pmol/L) had a vitamin B₁₂ level for all 3 assays above the cutoff values. Low vitamin B₁₂ was observed in 57% (Roche E170), 66% (Architect), 54% (Access) of these patients and low HoloTC (< 37 pmol/L) in 80%



	1 patient	Cutoff (pmol/L)	pmol/L
B ₁₂ Roche E170		145	165
B ₁₂ Architect		132	136
B ₁₂ Access		111	129
HoloTC RIA		37	9



Conclusion :

Comparing the results of vitamin B₁₂ assays with HoloTC, we found that HoloTC can be proposed as an early marker for vitamin B₁₂ deficiency.