

**The Study of Vitamin B<sub>12</sub> Absorption by a Whole Body Counter (Plastic):  
Vitamin B<sub>12</sub> Absorption after Resection of Gastro-intestinal Tract**

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Vitamin B<sub>12</sub> (B<sub>12</sub>) absorption was determined accurately by direct measurement of the amount remaining in the body with a whole body counter (Plastic) after the unabsorbed radio-B<sub>12</sub> was excreted in the feces, as described previously (Jap. J. Nucl. Med. 12:367-376, 1975).

Mean B<sub>12</sub> retention in 28 control patients with no B<sub>12</sub> malabsorption after 7 days was  $70.3 \pm 9.8\%$  (S.D.) and that in 5 patients with atrophic gastritis was subnormal,  $55.8 \pm 12.1\%$  (significance,  $p < 0.05$ ). B<sub>12</sub> absorption in 14 patients with partial or subtotal gastrectomy was significantly less than control,  $43.5 \pm 18.1\%$  ( $p < 0.001$ ).

Free B<sub>12</sub> absorption was negligible in 4 total gastrectomized patients from 0.1 to 0.54% and simultaneous administration of intrinsic factor (IF) with B<sub>12</sub> improved B<sub>12</sub> absorption remarkably. B<sub>12</sub> absorption in subtotal gastrectomized patients was suggested to be less than that in patients. There was a slight inverse statistical correlation between B<sub>12</sub> absorption and the length after operation or the age on test in gastrectomized

patients ( $r = -0.204$  and  $-0.309$ , respectively).

Mean free B<sub>12</sub> absorption was  $34.4 \pm 11.0\%$  in 5 patients with subtotal gastrectomy and increased to  $53.4 \pm 13.9\%$  by simultaneous administration of IF. The difference was statistically significant,  $p < 0.05$ . In a patient with 15 cm resection of terminal ileum for Crohn's disease B<sub>12</sub> absorption was almost normal, 47.2%. B<sub>12</sub> absorption was 35.4% in a patient performed 20 cm resection of terminal ileum and hemicolectomy and improved to 48.2% with IF administration, suggesting less secretion of IF in the gastric juice. On the other hand, B<sub>12</sub> absorption was only 3.5% in a patient with resection of 220 cm ileum, cecum and 7 cm ascending colon for carcinoid of Meckel's diverticulum and no improvement was shown by administration of IF, 6.1%.

Normal B<sub>12</sub> absorption of 52.1% was obtained in a patient performed complete proctocolectomy and permanent ileostomy for ulcerative colitis.

It is clear from these data that the distal ileum is the most important site for B<sub>12</sub> absorption.