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Serum Glycylproline Dipeptidyl Aminopeptidase Activity in Neoplastic Diseases

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Glycylproline Dipeptidyl Aminopeptidase (GPDAP; EC 3.4 14.1), discovered in rat liver by Hopsu-Havu and Glenner in 1966 (1), is an enzyme which cleaves the N-terminal X-proline from peptides. The enzyme has been purified from human submaxillary gland and hog kidney to apparent homogeneity. The enzyme activity has also been demonstrated in normal and pathological human sera. We have shown that the serum GPDAP activity was elevated in Chinese patients with liver diseases (2). In the present study, we examined the GPDAP activity in serum of patients with neoplastic diseases.

We used glycylproline-*p*-nitroanilide (a gift from Dr. Y. Kasahara, Fujizoki Pharm. Co., Tokyo) as substrate to determine the serum GPDAP activity kinetically at 37°C and pH 7.9 (3). The within-run and run-to-run precision of the test were 0.4–0.7% (C.V.) and 0.6–2.6% (C.V.) respectively. The determination of enzyme activity was linear at least up to 400 U/L (r-0.9998). The reference range for normal Chinese was determined to be 68.2 ± 16.0 U/L (mean ± SD; range 38.3–100.5) from 140 apparently healthy adults (age: 24–79 years). There was no significant difference between male (70.2 ± 15.1 U/L) and female (66.3 ± 16.6 U/L), ($p > 0.1$, n=70 each). These data generally agreed with values reported for other populations. In 40 primary hepatoma patients, 90% of them had serum GPDAP level higher than the upper limit of the reference range. But in leukemia patients, it was significantly lower than the normal and 50% were lower than the lower limit of the reference range. Other preliminary results indicated that the serum GPDAP activity decreased in gastric cancer, increased in pancreatic cancer, but was not altered in lung cancer and nasopharyngeal cancer patients. The cause of the alteration of serum GPDAP activity in patients with neoplastic diseases reamins to be elucidated. But the alteration in some patnological sera and its possible application as a diagnostic aids are intriguing and require further study.

References

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