Serum gamma-glutamyl transferase activity in volunteer blood donors

Serum gamma-glutamyl transferase (EC 2.3.2.2; GGT) activity is a sensitive index of liver function, and raised levels are found in a wide range of liver diseases (Rosalki, 1975). While normal values for GGT activity have been reported by many workers, the majority of these are based on limited numbers. There is need for further information on the range of variation in healthy adults, particularly with regard to variation with age. The purpose of this study was to measure the range of GGT activity in a healthy non-hospitalized population.

Nine hundred and twenty-nine randomly selected healthy blood donors, attending for their regular six-monthly donation, participated in this study. GGT activity was determined by an LKB 8600 Reaction Rate Analyser using reagents prepared in our laboratory. Serum (0-1 ml) was incubated with L-γ-glutamyl-p-nitroanilide in water (1-0 ml; 4-6 mmol/l) for 15 minutes at 35°C. The activating substrate was glycylglycine in tris (hydroxymethyl)aminomethane hydrochloride buffer (0-1 ml; 575 mmol/l). The reaction rate was followed spectrophotometrically at 410 nm. The final conditions in the reaction mixture were as follows: L-γ-glutamyl-p-nitroanilide—40 mmol/l; glycylglycine—50-0 mmol/l; tris(hydroxymethyl)aminomethane hydrochloride—190 mmol/l; pH 8-05. Post donation serum samples were used in this study and between batch variation was of the order of 1-5 IU.

Our results are shown in the Table. Males had consistently higher levels of activity compared to females, as noted in many previous studies, and this difference was observed at each age level. There was no alteration of activity with advancing age. A log normal distribution curve was observed for both sexes. Further studies are under way to determine the effect of short- and long-term plasmapheresis on enzyme levels.

**Reference**


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**Effective thyroxine ratio and venous stasis**

Increased venous pressure can produce an increase in protein-free exudate at the capillary level and thus increase the concentration of plasma proteins and the substances bound to them. Both the upright posture and venous compression can significantly increase serum concentrations of the highly protein-bound thyroid hormones thyroxine and triiodo-thyronine (Judd et al., 1975). The effective thyroxine ratio (ETR), however, being proportional to the free or non-protein-bound circulating thyroxine concentration (Wellby et al., 1973), should not be affected by venous stasis. The following observations have verified this.

Blood was collected from healthy volunteers without stasis and also 10-15 minutes after a sphygmonanometer cuff...