

The Half-Life of Exogenous GH After Suppression of Endogenous GH Secretion with Somatostatin

Suppression of endogenous growth hormone (GH) secretion by an infusion of somatostatin (SRIF, IV, 50 $\mu\text{g}/\text{m}^2/\text{hour}$) permitted measurement of the half-life of exogenously administered GH. Fourteen studies were performed in six male subjects (five normal adult males, one adolescent with GH deficiency following cranial irradiation). One hour after the start of the SRIF infusion, a bolus of monomeric biosynthetic GH (Nordisk, Gentofte, Denmark) was injected intravenously at a dose of either 500 mU ($n=9$) or 50 mU ($n=5$). Serum GH was measured over three consecutive 30-minute periods at intervals of 1, 5, and 10 minutes, respectively. Both immunoradiometric assay (IRMA) and enzyme-linked immunosorbent assay (ELISA) were used for the GH measurements. The half-life of GH was calculated from the logarithm of serum GH concentrations during the 90 minutes. A control study with GH, 500 mU, after 1 hour of saline infusion was performed twice in three subjects.

The serum GH was undetect-

able at the end of the first hour of SRIF. The distribution phase of injected GH was complete by 6 minutes. The mean half-life of GH was 9.3 ± 1.45 min after 500 mU and 8.5 ± 1.5 min after 50 mU. Combining the data from both studies gave a mean half-life of 8.9 ± 1.5 min. Replacing SRIF with saline did not change the results.

Hindmarsch PC, Matthews DR, Brain CE, et al. *Clin Endocrinol* 1989;30:443-450.

Editor's comment—There have been many discrepant studies suggesting that the half-life of circulating GH was more than 15 minutes. These previous studies measured the decay of either a small bolus of radiolabelled GH or a very large bolus of unlabelled GH in subjects whose endogenous secretion of GH had not been suppressed. The technical conditions of the present study—no interference from endogenous secretion; use of monomeric hGH at physiologic doses; serum GH measured by two sensitive and reliable methods—are clearly more appropriate.

Knowing that the half-life of the circulating GH is around 8 to 9 minutes is of clinical importance. It suggests that a 10-minute sampling interval may be necessary to properly evaluate the profile of en-

dogenous GH secretion and that the usual 20-minute interval of sampling may be insufficient.

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Second editor's comment—The authors note that the data reported in the above abstract are at variance with other reports. Using variable techniques, the half-lives of circulating GH have been found to be between 7 to 51 minutes; at least five previous articles reported that the half-life is greater than 15 minutes. The authors attribute the difference in their results to the use of SRIF. However, in an article by Faria et al (*J Clin Endocrinol Metab* 1989;68:535) in which SRIF and endogenous secretion of GH under GH releasing hormone stimulation were studied, the in vivo half-life was found to be 18.9 ± 0.8 min by monoexponential analysis, and 3.5 ± 0.78 min and 20.7 ± 0.7 min by biexponential curve fitting. Both studies tested normal young adults except for one patient in Hindmarsch's study who was GH deficient. The reason for differences in the results in these studies is unclear. The reader needs to be aware that a consensus has not been reached regarding the half-life of circulating GH.

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