

**Insulin-induced hypoglycemia, L-dopa and arginine stimulate GH secretion through different mechanisms in man.**

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We sought to clarify the mechanisms of growth hormone (GH) secretion induced by insulin hypoglycemia, L-dopa, and arginine in man. The secretion of GH as measured by increased plasma level, in response to oral administration of 500 mg L-dopa or 30 min-infusion of arginine, was not modified by prior intravenous administration of 200 micrograms GH-releasing hormone (GHRH). It was, however, completely blocked by preadministered 50 micrograms SMS201-995, a long-acting somatostatin (SRIH) analog. GH release with 200 micrograms GHRH was completely blocked by 100 micrograms SMS201-995. GH secretion caused by insulin-induced hypoglycemia was significantly reduced but still present after administration of 100 micrograms of the analog. These results suggest that a suppression of SRIH release may be partially involved in the stimulatory mechanism of GH secretion by L-dopa. Coadministration of GHRH accentuated the stimulatory effect of arginine on GH secretion. Arginine significantly raised plasma TSH levels. These findings suggest that arginine suppresses SRIH release from the hypothalamus to cause GH secretion because SRIH suppresses TSH secretion. It is also suggested that some factor (or factors) other than GHRH and SRIH are involved in the mechanism by which insulin-induced hypoglycemia stimulates GH secretion, because the effect of insulin was not fully blocked in the presence of SRIH analog. Thus all the tests for GH release appear to act via different mechanisms.