An insulin tolerance test (ITT) is a medical diagnostic procedure during which insulin is injected into a patient's vein to assess pituitary function, adrenal function, and sometimes for other purposes. An ITT is usually ordered and interpreted by endocrinologists.

Insulin injections are intended to induce extreme hypoglycemia below 2.2 mmol/l (40 mg/dl). In response, adrenocorticotropic hormone (ACTH) and growth hormone (GH) are released as a part of the stress mechanism. ACTH elevation causes the adrenal cortex to release cortisol. Normally, both cortisol and GH serve as counterregulatory hormones, opposing the action of insulin, i.e. acting against the hypoglycemia.

Thus ITT is considered to be the gold standard for assessing the integrity of the hypothalamic–pituitary–adrenal axis. Sometimes ITT is performed to assess the peak adrenal capacity, e.g. before surgery. It is assumed that the ability to respond to insulin induced hypoglycemia translates into appropriate cortisol rise in the stressful event of acute illness or major surgery.

This test is potentially very dangerous and must be undertaken with great care, because it can iatrogenically induce the equivalent of a diabetic coma. A health professional must attend it at all times.

Other provocation tests which cause much less release of growth hormone include the use of glucagon, arginine and clonidine