

# Insulin

<b>Description</b>	A peptide hormone secreted physiologically by the $\beta$ cells of the islets of Langerhans in the pancreas.
<b>Indication</b>	Investigation of the cause of hypoglycaemia.
<b>Additional Info</b>	<p>Proteolytic cleavage of 86 amino acid proinsulin polypeptide prior to secretion produces mature insulin molecule (51 amino acids) and equimolar quantity of c-peptide. Insulin is secreted in response to activation of sulphonylurea-sensitive <math>K^+</math> channel in response to hyperglycaemia and other secretagogues. Insulin is the dominant hormone regulating blood glucose concentration and has numerous modes of action that reduce circulating glucose levels.</p> <p>Insulin action is impaired in diabetes mellitus through either absolute deficiency (type 1) or relative tissue resistance (type 2).</p> <p>Tumoural secretion of insulin (insulinoma) is a rare cause of hypoglycaemia. Very rarely, tumours may cause hypoglycaemia through secretion of proinsulin or IGF-2.</p> <p style="color: red;">Please note that the insulin assay performed at RLUH is not suitable for the investigation of factitious hypoglycaemia. If exogenous insulin administration is suspected as the cause of hypoglycaemia, please inform the laboratory so that the sample can be referred externally for analysis.</p>
<b>Concurrent Tests</b>	Plasma glucose to confirm hypoglycaemia. Serum c-peptide and serum ketones where appropriate.
<b>Dietary Requirements</b>	Fasting sample required
<b>Interpretation</b>	<p>Insulin must be interpreted in the context of the prevailing glucose level, ideally when the patient is demonstrably hypoglycaemic (plasma glucose <math>\leq 2.5</math> mmol/L in adults).</p> <p>Normal insulin/glucose ratio: <math>&lt; 5.0</math> mU/mmol.</p> <p>(See also entry on c-peptide/insulin ratio: <a href="http://rlbuhtnet/jps/c_peptide_insulin_ratio.pdf">http://rlbuhtnet/jps/c_peptide_insulin_ratio.pdf</a>)</p>
<b>Collection Conditions</b>	<p>Fasting sample (where appropriate) or sample collected during hypoglycaemic attack.</p> <p><u>Inpatients</u>: Sample must be received in laboratory within 30 minutes of venepuncture.</p> <p><u>External hospitals</u>: Separate serum within 30 minutes of collection and freeze immediately. Send samples frozen.</p>
<b>Frequency of testing</b>	As required, contact lab for urgent analysis.