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**Lab Dept:** Chemistry

**Test Name:** C-PEPTIDE, SERUM

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***General Information***

**Lab Order Codes:** CPEPS

**Synonyms:** Connecting Peptide Insulin, Insulin-Connecting Peptide, Insulin C-Peptide, Proinsulin C-Peptide

**CPT Codes:** 84681 – C-peptide

**Test Includes:** C-peptide level reported in ng/mL.

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***Logistics***

**Test Indications:** Diagnostic work-up of hypoglycemia. Diagnosis of factitious hypoglycemia due to surreptitious administration of insulin. Evaluation of possible insulinoma. Surrogate measure for the absence or presence of physiological suppressibility of endogenous insulin secretion during diagnostic insulin-induced hypoglycemia (C-peptide suppression test).

Assessing insulin secretory reserve in selected diabetic patients who either have insulin autoantibodies or who are receiving insulin therapy. Assessment of residual endogenous insulin secretory reserve. Monitoring pancreatic and islet cell transplant function. Monitoring immunomodulatory therapy aimed at slowing progression of preclinical, or very early stage, type 1 diabetes mellitus.

**Lab Testing Sections:** Chemistry - Sendouts

**Referred to:** Mayo Medical Laboratories (MML Test: 8804/CPR)

**Phone Numbers:** MIN Lab: 612-813-6280

STP Lab: 651-220-6550

**Test Availability:** Daily, 24 hours

**Turnaround Time:** 1 - 3 days, test is set-up Monday - Saturday

**Special Instructions:** See [Patient Preparation](#)

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***Specimen***

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|-----------------------------|--|
| <b>Specimen Type:</b>       | Blood  |
| <b>Container:</b>           | Red top tube   |
| <b>Draw Volume:</b>         | 1.5 mL (Minimum: 1.2 mL) blood   |
| <b>Processed Volume:</b>    | 0.5 mL (Minimum: 0.4 mL) serum   |
| <b>Collection:</b>          | Routine venipuncture   |
| <b>Special Processing:</b>  | Lab Staff: Centrifuge specimen and separate within 1 hour of draw. Store and ship specimen at frozen temperatures in a screw-capped round bottom plastic vial. Forward promptly. |
| <b>Patient Preparation:</b> | Fasting specimen preferred.  |
| <b>Sample Rejection:</b>    | Mislabeled or unlabeled specimens; specimens other than serum or heparin; hemolysis  |

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### ***Interpretive***

**Reference Range:** 1.4 – 4.4 ng/mL

Note: Reference intervals have not been formally verified in-house for pediatric patients. The published literature indicates that reference values for adult and pediatric patients are comparable.

**Critical Values:** N/A

**Limitations:**

Significant hemolysis will result in artifactually lower C-peptide levels and such specimens are usually rejected. However, even mild hemolysis can lead to modest decrements in C-peptide values.

There is significant cross-reactivity between C-peptide and proinsulin based on data generated in our own laboratory (>20%). There is no significant cross-reactivity with other pancreatic islet cell peptides or neuroendocrine peptides.

Very high C-peptide levels (>180 ng/mL) may result in artifactually low measurements (hook effect). Such levels are highly unlikely to occur in patients, but if individuals are suspected of having serum levels >180 ng/mL, the laboratory should be alerted in order to allow dilution of the specimen prior to testing.

This assay uses 2 mouse-derived monoclonal antibodies and may, therefore, be prone to interference by heterophile anti-mouse antibodies (HAMA). The lab should be alerted to suspected or known HAMA-positive specimens in order to allow the use of heterophile antibody blocking tubes for such patients.

In the assessment of hypoglycemia, neither C-peptide nor insulin measurements are useful or indicated if serum blood sugar levels exceed 60 mg/dL.

In the diagnosis and management of diabetes mellitus, measurement of serum insulin levels usually provides superior information to that of serum C-peptide.

Patients with a basal metabolic index (BMI) >25 may have elevated fasting C-peptide levels.

**Methodology:**

Electrochemiluminescence Immunoassay

**References:**

[Mayo Medical Laboratories](#) September 2010

**Updates:**

3/2/2004: Test moved from Esoterix, Inc. to Mayo Medical Laboratories.

4/28/10: Updated minimum volumes.

7/29/2010: Removed alternate tube.

9/7/2010: Storage temp changed from refrigerated to frozen.

3/31/2011: Reference range update, previously listed as 0.9 – 4.3 ng/mL. Patient values will no longer additionally be reported in pmol/L.