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Hormone stability in human whole blood.

Jane Ellis M¹, Livesey JH, Evans MJ.

Author information

¹Department of Endocrinology, Christchurch Hospital, Private Bag 4710, Christchurch, New Zealand. Jane.ellis@cdhb.govt.nz

Abstract

OBJECTIVE: To determine whether significant changes in the **plasma** concentrations of 17 hormones occur when human whole blood is held at 4 or 24 degrees C for up to 24 h before separation of the **plasma** fraction.

DESIGN AND METHODS: Blood samples (EDTA) from healthy human volunteers were held at 4 degrees C or 24 degrees C for 0.5, 6 or 24 h before separation. **Plasma** concentrations of **ACTH**, aldosterone, gonadotrophin alpha-subunits, AVP, C-peptide, estradiol, FSH, GH, glucagon, IGF-1, IGFBP3, insulin, leptin, LH, prolactin, PTH and VIP were measured and the results compared to baseline values. Nonlinear regression was used to test for a significant mean rate of change. The time interval for median concentrations to change by 10% was determined.

RESULTS: Significant changes were observed for **ACTH** (decrease at 18.6 hr, 4 degrees C; 17.5 hr, 24 degrees C); AVP (increase at 2.6 h, 24 degrees C); insulin (decrease at 16.8 hr, 4 degrees C; 16.9 hr, 24 degrees C) and VIP (increase at 18.6 h, 24 degrees C). No changes were detected for the remaining analytes. **CONCLUSIONS:** The measurement of some hormones is compromised by a delay in **plasma** separation from normal human blood. While many hormones appear stable in normal whole blood, we recommend that processing occurs without delay.

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