ABSTRACT

Chromogranin A (CgA) is a 49 kilodalton protein found in the secretory granules of endocrine and neuroendocrine cells. Functioning as a prohormone containing multiple sites for endopeptidases that cleave CgA into several functional peptides including vasostatin I and catestatin, CgA release, promotes hepatic glycogenolysis, and diminishes glucose uptake by skeletal muscle; and catestatin, which inhibits catecholamine release from the adrenal medulla.

During routine testing of human sera using a CgA ELISA (Alpco Diagnostics™, Salem, NH) an apparent, high-dose hook effect was observed in approximately 15% of specimens. Because of the sequential format of the assay, this phenomenon was unexpected. We hypothesized that a peptide (or peptides) derived from cleavage of the CgA molecule and present in serum levels above the linear range of the assay, may be responsible for the apparent hook effect observed using the Alpco ELISA.

BACKGROUND

Chromogranin A (CgA) is a 49 kilodalton protein found in the secretory granules of endocrine and neuroendocrine cells. Functioning as a prohormone containing multiple sites for endopeptidases that cleave CgA into several functional peptides including vasostatin I and catestatin, CgA functions to promote hepatic glycogenolysis, and diminishes glucose uptake by skeletal muscle; and catestatin, which inhibits catecholamine release from the adrenal medulla.

RESULTS:

An apparent, high-dose hook effect was observed in approximately 15% of specimens. Because of the sequential format of the assay, this phenomenon was unexpected. We hypothesized that a peptide (or peptides) derived from cleavage of the CgA molecule and present in serum levels above the linear range of the assay, may be responsible for the apparent hook effect observed using the Alpco ELISA.

MATERIALS AND METHODS

• CgA analysis in serum was provided by Alpco Diagnostics™ (Salem, NH) and by CisBio Biotechnology™ (Sunnyvale, CA) utilizing Multiplexed CgA Microplate Assays.
• Dilution curve study using both assays. The project was approved by the University of Utah’s Institutional Review Board.
• Serum CgA was measured according to each kit manufacturer's testing instructions.
• Serum CgA was measured as a prohormone containing multiple sites for endopeptidases that cleave CgA into several functional peptides including vasostatin I and catestatin.
• Various levels of human sera were measured using the Alpco and CisBio kits.
• Data analysis was performed using Microsoft® Office Excel® (Microsoft Corporation, Redmond, WA), GraphPad® Prizm® (GraphPad Software Inc., La Jolla, CA) and heath™ evaluation software (Clinical and Laboratory Standards Institute, Wayne, NJ).
• All samples were retested at the same concentration (10x) for linear and nonlinear periods at 10°C.
• Serum CgA was measured according to each kit manufacturer’s testing instructions.
• Experiments were performed on a total of 32 patients.
• No significant differences were observed between the two kits.

CONCLUSION

The CisBio Chromoa CgA ELISA demonstrates acceptable performance characteristics for measuring CgA protein in serum.

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REFERENCES


