

MULTI-ANALYTE ELECTROPHORETIC IMMUNOASSAY FOR INSULIN, GLUCAGON, AND AMYLIN. Michael G. Roper, Christelle Guillo, Anna Lomasney, Adrian Schrell, Lian Yi. Florida State University, Department of Chemistry & Biochemistry, 95 Chieftain Way, Tallahassee, FL 32306.

Peptides released from islets of Langerhans help regulate blood glucose. Alterations in the peptide levels results in diseases such as type 2 diabetes. We have developed capillary electrophoresis immunoassays to simultaneously measure insulin, glucagon, and amylin secretion from islets. Paramount to this system is the use of multiple detection channels for different immunoassay reagents. Each channel is independent allowing for measurement of low and high concentration analytes, and spectrally resolves co-migrating species.

Glucagon and amylin, secreted at levels 100-fold lower than insulin, were measured in the FITC detection channel and insulin in the Cy5 channel.

Separation of bound and free components for each immunoassay was optimized separately and with the other components. Separation was complete in 3 minutes with limits of detection for insulin, glucagon, and amylin of 7, 9, and 8 pg, respectively. Using this simultaneous immunoassay, secretion of these peptides was measured from 14 islets over six hours.