INTRODUCTION

- Biochemical biomarkers offer the potential to complement clinical assessments used as a primary study outcome in clinical trials of PD.
- Diurnal fluctuations of protein biomarkers have been reported but little is known about Parkinson's biomarkers -alpha-synuclein and DJ-1.
- Cerebrospinal fluid levels of -alpha-synuclein, DJ-1, -alpha-42, and -alpha-40 were measured to determine diurnal variations and intra-assay variability upon repeated testing.
- Plasma, serum, and CSF samples collected at 11 time points over 26 hours.
- Samples available as a resource for the research community to access at www.michaeljfox.org

METHODS

STUDY 1: YOUNG HEALTHY VOLUNTEERS

- 13 healthy subjects ages 30–52 (9 Male/4 Female)
- Insertion of the lumbar and venous catheters at approximately 5.30am
- CSF samples taken at 11 time points during a 26-hour interval
- Blood samples were obtained concurrently with the CSF collection.
- Two identical collection periods 10 to 14 days apart

STUDY 2: PARKINSON'S DISEASE SUBJECTS AND MATCHED CONTROLS

- 12 PD Subjects and 6 age and gender matched controls
- Same collection protocol followed as Study 1
- All samples were measured at 3 dilutions in duplicate

NO ACUTE CHANGE IN BIOMARKERS OVER 2 WEEKS: CSF sampling of -alpha-synuclein, DJ-1, -alpha-42 and DJ-1 over short time does not change the observed levels. -alpha-synuclein and -alpha-42 significantly increased over 26 hour sampling period while DJ-1 remained at constant levels over the collection. -alpha-synuclein was higher in males compared to females while DJ-1 appeared to be elevated in older individuals. With the exception of DJ-1, all other biomarkers measured demonstrated a positive correlation with time and total protein levels over the sampling period.

VARIABILITY OF BIOMARKERS IN PARKINSON’S AND AGED MATCHED CONTROLS

CONCLUSIONS:

- Biomarkers remain at consistent levels over a 2 week period.
- Frequent CSF sampling over 24 hours increases several CNS biomarkers in both PD and control populations.
- -alpha-synuclein, DJ-1, -alpha-42, and Abeta 1-40 follow a similar pattern while DJ-1 differs over the sampling period.