Quality control (QC) of the laboratory analyses of neurodegeneration biomarkers (cerebrospinal fluid-based neurochemical dementia diagnostics, NDD) requires preparation and characterization of a proper QC sample. Unfortunately, so far such certified reference material (CRF) is not commercially available. Moreover, several confounding factors strongly influence the performance of the laboratory analyses of the NDD biomarkers, which makes the QC even more important. In this study we addressed the influence of different storage conditions on the results of the NDD biomarkers: Aβ1-40, Aβ1-42, Tau, and pTau181. The freshly collected CSF samples (n=10) were aliquoted and exposed to the following storage protocols:

(a) kept at room temperature for one week,

(b) deep-frozen and thawed up to three cycles, and

(c) deep-frozen, thawed two days before the analyses and kept under +4°C to be compared to the freshly thawed aliquot.

Moreover, we present the data on a long-term (more than two years) CSF sample stability under deep frozen condition. We conclude that the four biomarkers analyzed in this study are relatively stable when the CSF sample is kept at room temperature for one week; one or two thawing cycles do not profoundly affect the biomarkers concentrations; keeping a previously frozen sample at +4°C does not affect the concentrations of Aβ1-42, Tau, and pTau181, although it results in a significant increase of the Aβ1-40 concentrations; and finally, the four biomarkers seem to be stable in a sample stored deeply frozen for about two years.