Lymphocyte Proliferation as a Means to Assess Cell Cycle Dysregulation in Alzheimer’s Disease: Analytical Performance of the LymPro Assay

Paul A Jagemann 1, Mark Sanfilippo 2, Ronald Giner 1, 2
Amarantus Bioscience, Vision Biotechnology Consulting

Background

Several studies have shown that peripheral blood mononuclear cells (PBMCs) can serve as a surrogate for neurons to assess cell cycle dysregulation in Alzheimer’s disease (AD) and other neurodegenerative disorders. The LymPro test, which measures mitogenic response to peripheral blood mononuclear cells (PBMCs) in response to mitogens such as phytohemagglutinin (PHA), vimentin-specific antibody cocktail, and phorbol myristate acetate (PMA), has been shown to be a suitable analytical performance for use in a fit-for-purpose fashion. The LymPro test has been used to assess cell cycle dysregulation in MCI AD and confirmatory studies in AD patients. However, the analytical performance of the LymPro assay has not been re-established in a contract setting for 10 years. The objective of this current study is to assess the analytical performance of the LymPro test, which will be used to compare AD and normal (N) subjects with known cognitive impairment.

Materials

• PBMCs
• Mitogens

Methods

• PBMCs were isolated from healthy volunteers
• PBMCs were stimulated with mitogens
• PBMCs were incubated at 37°C for 72 hours
• PBMCs were harvested and analyzed using flow cytometry

Results

• PBMCs showed a significant increase in cell cycle re-entry in AD patients compared to normal controls
• PBMCs showed a significant increase in cell cycle re-entry in AD patients compared to normal controls

Conclusions

• The LymPro test is a suitable analytical performance for use in a fit-for-purpose fashion
• The LymPro test is a suitable analytical performance for use in a fit-for-purpose fashion

References


For additional information:

Amarantus Bioscience

Conclusions

The LymPro test, which measures mitogenic response to peripheral blood lymphocytes, demonstrates acceptable pre-analytical and analytical variation in this study. The test will transition into multiple clinical studies for differentiation of individuals at risk for Alzheimer’s Disease from other dementias.