

MEASUREMENT OF P217 TAU IN PLASMA USE WORKFLOW OF NEURO-IP AND LUMINESCENCE ELISA

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Background

We evaluated a new Luminescence Immunoassay (LUM) for the quantification of Tau protein phosphorylated on T217 (p217 Tau) in plasma or serum. The method includes an upstream enrichment step (Neuro-IP) with immunoprecipitation of brain derived Tau protein (BD-Tau), followed by measurement of eluates in a sandwich immunoassay based on a novel monoclonal antibody specific for p217 Tau.

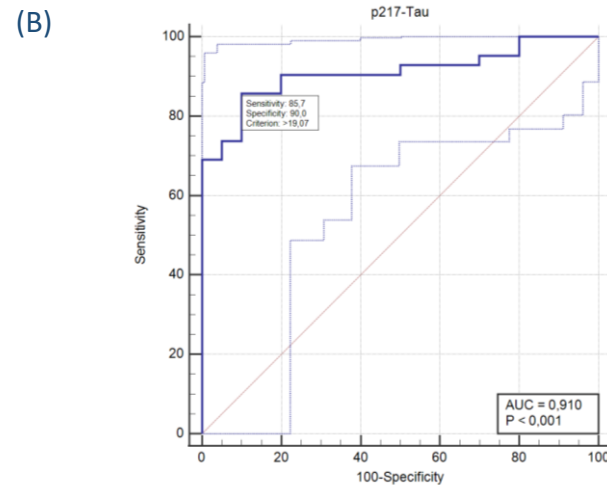
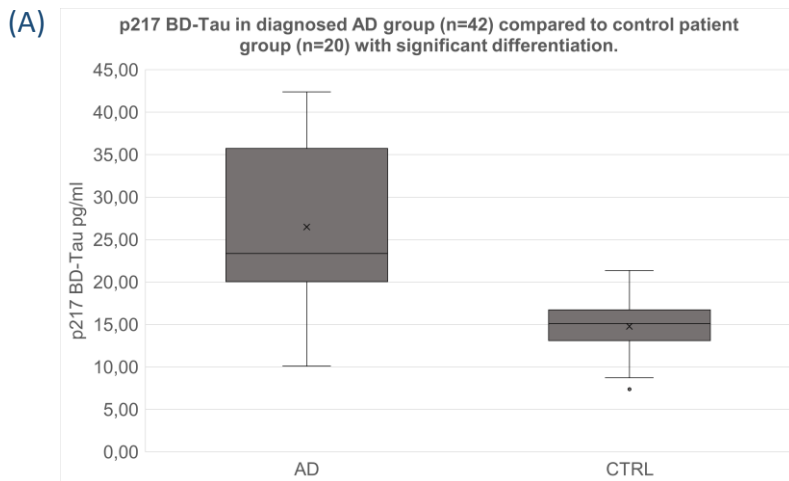
Methods

Three panels of plasma samples obtained from University Goettingen and commercial sources, all classified as characterized by CSF levels of A β 40/42, p181Tau and hTau, measured with the Lumipulse system, were used. The subjects were classified according to the clinical cutoff point into the diagnostic groups A β -positive (AD, n=42) and A β -negative (CTRL, n=20). BD-Tau was extracted from a 200 μ l plasma sample using BD-specific Neuro-IP according to the protocol. The eluates were quantified using a p217- and BD-Tau-specific, highly sensitive Luminescence Immunoassay with unique in-house antibody-coated technology.

Conclusion

For the first time, our laboratory investigated the measurement of p217 Tau on routine plasma samples using a common luminescence microplate immunoassay following Neuro-IP enrichment. Immunoprecipitation minimizes matrix effects and enables sensitive p217 Tau detection using Luminescence Immunoassay (ELISA). The p217 Tau LUM assay provides superior information about the interpretation of patient status in the context of Alzheimer's disease risk assessment.

Results



(C) Summary of ROC analysis results:

Area under the ROC curve (AUC)	0,910
Standard Error ^a	0,0370
95% Confidence interval ^b	0,809 to 0,967
z statistic	11,065
Significance level P (Area=0.5)	<0,0001
Youden index J	0,7571
Associated criterion	>19,07
Sensitivity	85,71
Specificity	90,00

(A) BD-specific Neuro-IP with subsequent measurement of p217 BD-Tau concentration using the p217-Tau LUM assay showed significant differentiation between the A β -positive group and A β -negative group ($p < 0.001$). (B, C) The ROC analysis for differentiation of the two diagnostic groups showed an AUC of 0.910 for the BD-Tau LUM assay ($p < 0.001$). Notably, p217 BD-Tau demonstrated very good performance and strong association with CSF A β pathology.