

## EEG as a pharmacodynamic endpoint during development of a novel drug in alzheimer's disease

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Electroencephalography (EEG) slowing is considered a hallmark of the neurodegenerative process and related deficits observed in Alzheimer's patients. For patients with both mild and more advanced stages of AD, one commonly reported finding is an increased power in both delta and theta bands. Quantitative EEG provides viable and promising avenues for clinical investigation, with the aim of developing useful biomarker(s) of early cognitive decline. Recently, EEG has gained renewed interest among those interested in discovering and developing novel therapies, for several important reasons: (1) to establish central nervous system pharmacodynamic activity for novel compounds and (2) to potentially yield noninvasive and relatively low-cost biomarkers for key diseases, including AD. A novel analytical approach of EEG also includes the multivariate technique. This method uses pair wise comparison of groups where classifiers are developed from statistical pattern recognition (SPR) to a large set of EEG features. For each classifier, the SPR finds an optimal combination of the EEG features which separate the two groups under consideration. The accuracy, sensitivity, and specificity of each classifier is estimated using 10-fold cross validation. The technique also enables the development of a new way to monitor the physiological EEG changes, acetylcholine activity, and an index (Ach Index) has been constructed. The Ach Index was estimated from spectral and synchronization activity of the EEG. The significance of the novel method to analyze EEG will be discussed in relation to Phase I/II results of a new symptomatic drug for the treatment of Alzheimer's Disease.

### Biography

Niclas Brynne has a Ph.D. in Clinical Pharmacology from the Karolinska Institute, Stockholm, Sweden. He is a senior leader with over 20 years experience in strategic leadership of global drug development from Pharmacia and AstraZeneca. He has been the Director for Translational Medicine Department for several years and led the development of biomarkers in the CNS area (Analgesia, Neurology and Psychiatry) as well as a number of novel projects for treatment of Alzheimer's Disease and Cognitive Disorders. He recently joined MentisCura, an innovative research company, as a senior VP. He is also a board member at the Stockholm Brain Institute.

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