

## **DMAE - Source density analysis of functional topographical EEG - monitoring of cognitive drug action**

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Electrical changes of the brain induced by mental work in the presence or absence of a drug formulation containing dimethylaminoethanolrotrate (DMAE), vitamins and minerals were analysed. Sixty elderly volunteers (30 females and 30 males; aged 40 - 65) who lacked concentration and efficiency during mental exercise according to their own opinions participated in a double-blind, placebo-controlled study.

The EEG recordings were carried out before and after 12 weeks medication and were analysed according to the electrical charges at the scalp surface (Laplacian estimate) followed by Fast Fourier Transformation to obtain quantitative data. Whereas no change of electrical charge could be observed after 12 weeks of treatment in the placebo group, the verum group taking 1 capsule per day of an established drug containing a biogenic amine-vitamin combination revealed decreases in theta power during rest and increases in absolute theta power induced by mental demand within the area known to change its electrical activity during mental exercise.

**In the light of the current hypothesis that high theta resting power and low increases at frontotemporal brain areas during mental work indicate mental impairment, treatment with the drug under investigation was seen to successfully reverse these changes.**

**This drug effect was localized in the frontotemporal cortex in a statistically significant manner during both the memory and the symbol recognition tests.** The observed effect is fully consistent with a previous study using Fourier transformed data from conventional EEG voltage recordings.

It can be concluded that an analysis of EEG data by means of the charge mode provides an excellent tool to quantify drug effects especially in cognitive research. A second perspective arises from the fact that it should be possible to recognize mental impairments at a very early stage by using this method, thus providing the possibility of an early treatment.

PMID: 9367941 [PubMed - indexed for MEDLINE]

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