

# TEMPORAL, OCCIPITAL AND PARIETAL EEG-BRAIN-MAPPING CHANGES IN PRE/POST-THC-MUSIC AND REST

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## Background

Cannabis (THC) is known to change auditory perception, as many musicians and music listeners report in narratives, interviews and biographies. Audiological studies demonstrated a THC-induced preference for higher frequencies and expanded metric scaling of auditory events.

## Aims

Topographic imaging studies on intensity and locality of cerebral processes investigating cannabis and music perception (MP) are not available.

## Method

An ethnographic pre/post study was conducted in a habituated naturalistic setting. EEG-Brainmapping Data (28 EEG traces; rest; pre/post music listening; smoked Cannabis 20 mg Δ9 THC) were averaged and treated with a T-test and a visual topographic schedule. Comparisons between Pre/Post-THC-Rest (PPTR), and Pre/Post-THC-Music (PPTM) were performed.

## Results

During Post-THC-Rest (PoTR)  $\alpha$ -waves decreased; however, compared to Pre-THC-Rest (PrTR) and Pre-THC-Music (PrTM), the Post-THC-Music (PoTM) showed higher  $\alpha$ -percentage and -power in the parietal cortex, while other frequencies decreased in power.

T-Test of PrTR and PoTM, further PPTM comparisons elicited a significant change ( $p<0.025$ ) in left occipital area. Comparing PPTM, differences ( $p<0.025$ ) were also found in the right frontotemporal cortex on  $\theta$ , and on  $\alpha$  in the left occipital cortex. During PrTM listening  $\theta$ -percentage increased but decreased more in PoTM than during rest. In both temporal lobes  $\theta$ -amplitudes decreased during PoTM as well.

## Discussion

Changes in temporal and occipital areas and increasing  $\alpha$ -signal strength in parietal association cortex seem to represent an interindividual constant EEG correlate of altered MP and hyperfocusing on acoustic space.  $\alpha$ -amplitude changes might represent altered, intensified attention and show a marked similarity to reverse  $\alpha$ -findings in studies with gifted individuals. Changes of temporal and occipital areas, both known to be involved in MP might represent altered MP and an intensified insight into the 'space between the notes'.

## Conclusion

THC has a measurable influence on cerebral music processing and seems to enhance acoustic perception. Cannabis might provide benefits for the hearing impaired.