

## **Abstract**

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**Title of diploma thesis:** Effects of chronic growth hormone and melatonin administration on EEG delta power in old rats.

Slow wave sleep (SWS), characterized by an increase in delta power (typically 0.1-4 Hz) of EEG spectral analysis is considered to be a core component of deep sleep and is associated with sleep's anabolic restorative properties necessary for good mental and physical health. The reduction of delta power represents one of the hallmarks of sleep alterations with age. In order to study effects of chronic growth hormone (GH) and melatonin administration on sleep EEG power spectra, young (3-4 months) and old (22-23 months) male Wistar rats were implanted with EEG and EMG electrodes. During one month a group of old animals was treated with GH administered intraperitoneally (i.p.), second group of old animals was treated with melatonin diluted in drinking water. Additional two groups of young and old rats with no treatment served as controls. After the treatment, EEG and EMG were recorded and analyzed. Then Fast Fourier transform was used to compute spectral power of REM and NREM sleep. Our results show rapid differences in sleep EEG delta power as well as in some other frequencies between young and old control rats. Old animals treated with GH or melatonin exhibit values of delta power and generally whole EEG power spectra comparable with young rats. These results suggest that at least some of the age-related changes in sleep can be positively adjusted by GH or melatonin treatment.