Plan Overview

A Data Management Plan created using DMPTool

Title: Study of brain regions and neural mechanisms involved with respiratory responses in situations of hypercapnia during sleep and wakefulness.

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Project abstract:

Central chemoreception is a fundamental homeostatic mechanism and the dysfunction in its regulation, especially during sleep, has been related to several sleep-related respiratory diseases, which are present in an increasingly prevalent way in the current population. Evidence suggests that throughout the sleep-wake cycle there is a variation of central chemoreflex, as well as the predominance of the chemosensitive sites and neurochemical mechanisms involved, however such mechanisms are still little known. Thus, the present project proposes to study neurotransmitters (orexins, melatonin, MCH) and regions of the central nervous system classically involved in the control of the sleep-wake cycle such as the tegmental nucleus pontine peduncle (PPTg), or involved with respiratory disorders during sleep as is the case with the kölliker-fuse (KF) nucleus, which share functions in respiratory control and, possibly, have relevance in the control of the hypercapnic central chemoreflex. We will investigate the possible role of these neurotransmitters and brain regions in the modulation of respiratory control during activation of the central chemoreflex, during wakefulness and sleep. To do so, neuroanatomical and functional techniques will be used, including immunohistochemistry, microinjections, central microdialysis, pulmonary ventilation recordings in unanesthetized rats, EEG, EMG, body temperature as well as electrophysiological experiments, with patch-clamp technique.

Start date: 02-01-2021

End date: 01-31-2023

Last modified: 02-27-2023

Copyright information:

Study of brain regions and neural mechanisms involved with respiratory responses in situations of hypercapnia during sleep and wakefulness.

Data will be obtained from the pulmonary ventilation recordings in a plethismograph system and from the EEG/EMG recordings of unanesthetized rats.

Data will be acquired through specific software for recording and analyzing ventilation, EEG and EMG data. Then it will be transferred to tables for graphing and statistical analysis.

Graphics, figures, and tables.

All procedures were approved by the Ethics Committee for the Use of Animal of Biosciences Institute/UNESP (CEUA number 6766090620).

As a result of this project, articles will be published.

Data will be backed up with copies in hard drives in laboratory computers, as well as the university offers google Drive, which assists in data storage.

All researchers involved in the project will have access to the data, but only the researcher responsible and coordinator will edit and update the backup.

The data will be shared with the scientific community through publications. Moreover, the metadata was inserted in a repository, which can be acessed by this link: 10.6084/m9.figshare.22134434

We store these data in drives of the laboratory and in a cloud-based storage service.

The data will be presented scientific congresses and it will be published in the form of articles.

No restriction.

As a coordinator of the project, I will be responsible for it.

Collaboration with other researchers to complete all the proposed protocols.