

Report of "Research Award of Oral Sciences"

Major: Oral Sciences

Grade: 3

Department: Department of Stomatognathic
Function and Occlusal Reconstruction

Name: Chavan Parimal Ravindra

Title: Relationship between sleep and pain under chronic stress

1. Aim of research and results obtained

This research is based upon three physiological activities in the human body- stress, sleep and pain. In this research we are trying to better understand the relationship between these three as well as provide better pain management solutions. Predictable chronic mild stress (PCMS) is a chronic mild variety of stress experienced in day-to-day life but there have been very few studies to understand the exact nature of PCMS and its implications on other processes of the human body. Orexins are neuropeptide hormones that play a role in regulation of sleep and stress behaviour. Using the activation of orexin neurons in mouse brain (hypothalamus), the effect of PCMS on sleep and pain behaviour can be assessed. We are also using an orexin-antagonist drug to help in countering these effects. In conclusion, this study is aimed at evaluating the involvement of the orexin system in predictable chronic mild stress (PCMS) and the effects of suvorexant, a dual orexin receptor antagonist, on nociceptive behavior in PCMS.

2. Self-evaluation of research achievement:

The research is under progress and I have obtained promising results following which the data is to be published in a scientific journal.

3. Meeting presentation:

None

4. Journal publication:

Activation of lateral hypothalamic orexin neurons is involved in predictable chronic mild stress-induced hyperalgesia, Life Sciences (under review) Parimal Chavan, Sachiko Chikahisa, Tetsuya Shiuchi, Noriyuki Shimizu, Junhel Dalanon, Kazuo Okura, Hiroyoshi Sei, Yoshizo Matsuka