

SPACE LIFE SCIENCES SYMPOSIUM (A1)
Human Physiology in Space (2)

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ASSESSMENT OF SLEEP PATTERNS, ENERGY EXPENDITURE, CIRCADIAN RHYTHMS OF
SKIN TEMPERATURE, SALIVARY AMYLASE: MARS SIMULATED MISSION AT MARS DESERT
RESEARCH STATION**Abstract**

Potential disturbances of circadian rhythmicity in the space flight environment and consequent decrements in performance efficiency and in the well-being of astronauts are major concerns of space programme. So; this study was planned to assess sleep patterns, energy expenditure and circadian rhythms on subject's skin temperature in the Mars simulated mission utilizing a noninvasive handy device and salivary biomarker i.e salivary amylase. Six healthy subjects participated and wore the device for performing activities (SenseWear Pro ArmbandTM (SWA) (Body Media, Pittsburgh, PA). Completed sleep logs twice daily and timed saliva was collected for analysis of salivary amylase (IBL, Hamburg, Germany) during the whole mission. The sleep duration, metabolic equivalents of a task, skin temperature were significantly decreased after one week while salivary amylase levels significantly decreased. These results indicate that the methods tested here will be sufficiently sensitive to detect sleep decrements and contributes to determine circadian rhythm changes in astronauts aboard ISS. Salivary amylases levels and sleep duration (SenseWear Pro ArmbandTM (SWA) (Body Media, Pittsburgh, PA) could serve as a sensitive marker for determining circadian rhythmicity. Key words: Sleep duration, skin temperature, salivary amylase, Sense wear, Mars simulated mission.