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ON THE CIRCADIAN CYCLE MODIFICATIONS OF THE MEMBERS OF THE FIRST LATIN
AMERICAN ANALOGOUS MISSION FOR RESEARCH OF MARS**Abstract**

Introduction: The first Latin American Analogous space mission for the research of Mars took place in the analogous system of Astroland Interplanetary Agency located in Spain. During 15 days, 4 humans were in an analogous settlement constituted by a cave system, without climate interruption, with its temperature and humidity controlled. It also had a red internal lighting system without any access to sunlight, a modified atmosphere with real stressors, extravehicular walks, and an equipped laboratory.

Purpose: Evaluate the changes in the circadian cycle of 4 analog astronauts in a 15-day long mission, where they had no access to sunlight.

Methodology: The analog mission was formed by 4 crew members, 3 Mexican females and 1 Peruvian male, named Astro 1: 25 years old, Astro 2: 24 years old, Astro 3: 23 years old, and Astro 4: 23 years old. During the 15 days, their sleep was monitored the full 24 hours of the day, where tests were used to evaluate their alertness and performance on different tasks. A photo was taken of their retinas during the day and night. There were also stressors and the common environment of the ISS (food, exercise, psychological tests, team member coexistence, which hadn't met before the mission).

Results: Fluctuations in the circadian cycle were found in the 4 members, finding a time gap between their previous sleep patterns of 2 hours a day. The crew members went to sleep 2 hours later every day. Changes were shown in their physiological parameters, and overall in their alertness and psychological state.

Conclusion: This study will be implemented in patients with changes in the circadian cycle. The data has been compared with NASA's human research roadmap.