

NUTRITIONAL AND PSYCHOSOCIAL ASPECTS IN TWO ANTARCTIC BASES

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Introduction: The objective of this study is to investigate the relationships between nutritional status and environmental and psychosocial factors in personnel at Mario Zucchelli Base (MZ) in 2002/2003. The study also included the Italian-French Base Dome C in 2003/2004.

Methods: The data used for the analysis involved two groups of subjects working at Dome C (30 subjects) and MZ (34 subjects). At arrival and at departure, blood, hair samples and anthropometric measurements were taken from them to be analyzed in Italy. Data obtained was statistically treated by using t-Test for correlated samples.

Results: Considering the total of subjects for which there is available information, three parameters are considered (ferritin, transferrin and cortisol), among these the only significant variation is cortisol. The operators at Dome C were divided into two groups, temporary personnel and long term personnel. Only in the group of temporary subjects, cortisol increased from 170.61 to 214.80 ($p>0.05$). Comparing both ferritin and transferrin from Dome C to MZ the only decrease was ferritin from 167.37 to 142.00 ($p>0.05$) noted at MZ. Regarding seven essential elements, Ca, Cu, Cr, Fe, Mg, Mn and Mo, measured in hair, the temporary operators at Dome C demonstrated an increase of chromium from 0.1880 to 0.2440 ($p>0.05$), while the long term personnel presented a decrease in iron from 23.21 to 14.25 ($p>0.05$). The comparison between bases introduces some interesting differences. At Dome C none of the named elements show significant variations. Instead, at the MZ base, a decrease of calcium was observed ($p>0.1$).

Discussion: Stress and lack of exercise seem to have an important bearing upon the Ca balance observed. Several studies have shown that people who are under extreme nervous strain have negative calcium balances even when the dietary intake is good. The meaningful increase of the cortisol would seem to suggest that the stay itself for a short time at Dome C involves a psychophysical stress. The variations observed were probably due to environmental conditions such as: isolation, atmospheric conditions and prolonged presence of light.