

ION MEASUREMENTS IN VARIOUS CAVES AND OPTIMIZATION OF THERAPEUTIC PARAMETERS

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Abstract

Introduction: The study investigated three different salt caves to get optimum parameters for deriving most efficient therapeutic treatments.

Materials and methods: For this, air-ion concentrations were performed using a Gerdien ion counter in Çankırı, Iğdır and Nahçıvan salt caves. Simultaneous air temperature and air humidity measurements were taken. To determine the ion constituent, air samples were taken to be investigated in ICP-MS.

Results: The highest ion concentrations were found in Nahçıvan and the lowest in Iğdır. The average ion concentrations were computed as 10000, 500 and 80 ions/cm³ in Nahçıvan, Çankırı and Iğdır, respectively. The caves indicated different environmental conditions such as, air temperature, indoor humidity, physical dimensions (cell height), and connectivity conditions to outdoor atmosphere. Air temperatures were also found highest in Nahçıvan (20°C). Indoor humidity was found largest in Çankırı (65%), followed by Nahçıvan (55%) and smallest in Iğdır (50%). The ICP-MS analysis is still on going.

Conclusions: Nahçıvan was the cave in which for a long time fuel based machinery has not been used. This no machinery duration was decreasing from Çankırı to Iğdır, being in parallel with the reducing ion concentrations. The air temperatures in Çankırı and Iğdır were also below Nahçıvan (15-16°C) during the measurements. Iğdır salt cave has the largest openings that led to the reduced air humidity values. Studies to get the optimum conditions for getting standardized Speleotherapy treatments are going on.

Key-words: Çankırı salt cave, Nahçıvan salt cave, Iğdır salt cave, Gerdien ion counter, climatic conditions