

AIRBORNE MICROORGANISMS IN SHOW CAVES FROM ROMANIA

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Mesophilic bacteria and fungi were investigated in the air of three show caves in the Western Carpathians, Romania. The concentration of total aerobic viable bacteria, staphylococci, streptococci and Gram negative bacteria, and *Candida* spp. was generally higher within the visited areas, after the tourists' passage, than in the inner part of the caves or outside. In contrast, the dominant fungi *Aspergillus*, *Penicillium* and *Mucor* were found at higher concentration outside the caves, their number decreasing from the entrance towards the interior of the cave.

Key words: airborne microorganisms, mesophilic bacteria, fungi, show caves.

1. INTRODUCTION

The caves represent an extreme environment, characterized by specific ecological conditions, such as the absence of sunlight, a relatively constant temperature, high humidity, and slow airflows. The cave air is very low on dust, pollutants or bacteria, yeasts and aggressive allergens. Because of these qualities, the karstic aerosols were used in speleotherapy for about fifty years in some Central Europe countries, in the Balkans and in Turkey (GERJEVIČ, 2002; KARAKOCA *et al.*, 1995). The microbiological studies concerning airborne microorganisms in caves are very scarce. MOLNAR (1961) performed such a study in the Baradla Cave, showing that *Bacillus megaterium* and *Sarcina* spp. were the most frequent airborne microorganisms, but the concentration of pathogenic bacteria was very low. In Romania, the microbial life of caves was studied in black sediments, moonmilk, clay and water (MANOLACHE, 2001), but not in the air.

The aim of the present study is to assess airborne microorganisms and the human impact in three show caves from Romania, in order to provide information about the air quality in this environment.

2. MATERIALS AND METHODS

STUDY LOCATION

The *Urşilor* Cave is located in the Crăiasa Valley, where the western part of the Bihor Mountains flows into the Beiuş depression. The cave is developed on two