Fungi in perennial cave ice

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Screening of 1000-years old ice layers from the perennial ice block in Gheţarul de la Scărişoara Cave (Romania) revealed the presence of a diverse fungal community. The ice layers were deposited annually by freezing of percolating water containing debris from the surface. Using molecular techniques, based on DGGE fingerprinting of 18S rRNA gene fragments and sequencing, we detected fungi in presently-forming (*i.e.*, 1-year old) and in 400 and 900 years old ice layers, respectively. The fungal community profiles in enriched cultures were relatively different compared to those derived from the corresponding environmental ice samples. The community profiles of fungi cultivated at 15°C were more complex compared to the DGGE profiles of fungi cultivated at 4°C. The fungal community was dominated by sequences belonging to the cryophilic yeast *Mrakia stokesii* in all ice samples. Another cryophilic fungus, *Mrakia gelida*, was only identified in recent ice samples. Sequences of more ubiquitous fungi *Aureobasidium pullulans*, *Teberdinia hygrophila*, *Hyphoderma praetermissum*, *Leucosporidium yakuticum*, *Candida* sp., *Cercomonas* sp., *Thelebolus* sp., alongside several yet uncultured fungi, were also identified.

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