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Pillow lavas volcanic glasses (ancient and recent) and traces of life in them

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Microbial complexes from volcanogenic rocks both ancient (Early Paleoproterozoic (2.41 GA) basalt pillow-lavas with inclusions of volcanic glass from Karelia) and recent (fresh volcanic glass from pillow-lavas of underwater Middle-Atlantic Ridge were revealed, studied and compared.
Our studies confirmed that basaltic glass of the Early Precambrian submarine eruptions was inhabited by microbes in a similar way as it had been done for volcanic glass of modern eruptions. So, well preserved pillow-lavas, that are the main component of Arkhaean and Early Paleoproterozoic greenstone belts, could be the most perspective for searching of traces of ancient life on the Earth. Consequently, it is possible to say, that volcanogenic rocks are not the obstacle for finding traces of life in them.
The assumption that volcanic rocks served as habitats for the early microbial life was not unexpected. Some of the most primitive organisms close to the base of the phylogenetic tree are thermophilic microbes. Some data indicates that early life could be restricted to the hydrothermal vents in volcanic settings1. For instance, filamentous bacteria described from the massive sulfide deposits (age $\sim$3.235 Ga) are interpreted as formed under black smoker conditions2, which provide the temperature tolerant for the growth of thermophilic bacteria (about 70oC).
It was additionally proposed that life can be present immediately after volcanic eruptions, when the temperature of rock surface decreases below 113oC3,4 and bacteria penetrate the glass-like material of pillow lavas together with seawater. Of interest also is the development of life at the igneous rock-water boundary5,6,7, when microbial colonization spans not only surface but also penetrates deep into the rock.
As a result of bacterial-paleontological investigations diverse and numerous remains of microorganisms were found. Studying and comparison of them permitted us to speak about presence of rather diverse fossil microbial complex in basalt pillow-lavas and their glasses both in Early Paleoproterozoic and Recent. This notes that well preserved pillow lavas of the Archaean and Early Paleoproterozoic greenstone belts are promising for the discovery of traces of ancient life on Earth.
It is necessary to note that in both complexes filament forms predominate and that presumably eukaryotic forms were met.
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