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GEOBIOLOGIC RELATIONS BETWEEN LITHOLOGIES OF THE CHURUVITAS FORMATION WITH NATIVE BACTERIUM ON THE QUADRANT OF VILLA DE LEYVA

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Geological and microbiological information was gathered in order to identify the potential relationships between minerals and/or chemical elements contents in the sparse biomicrite, a sandstone and a mudstone with bacterial communities that were cultivated from a "scrapped off" made on each of these lithologies which were sampled on the Cretaceous sedimentary sequence of the Churuvita Formation (Road Tunja-Villa de Leyva). Three types of evaluations were made on each of these sample rocks: quantitative mineralogy was obtained through rock petrography, X-ray fluorescence analysis of the major element composition (weight percent) of the rocks and quantitative bacterial count per gram in order to know the amounts of communities that would be able to grow in each type of rock. Analogous amounts of bacterial communities grew up in the three lithology types: 144 bacterial morphotypes grew up in total; 43 of them corresponding with the sparse biomicrite, 49 with the fine grain sandstone and while 52 with the mudstone. No significant differences in the growth of bacterial populations were found between the three rocks types. The reason for this could come be because the communities which developed over the biomicrite obtained their basic necessities from calcium carbonate (87.3 percent) while those ones which rose over the sandstone and siltstone obtained there necessities from the silica (82 quartz and 58 percent, respectively).

High Al2O3 and SiO2 concentrations in the siltstone (JY-3 sample) could have facilitated the development of most important bacterial populations. The preliminary findings show the need to carry out new systematic samplings on the rocks to establish the influence level the lithologies over the bacterial communities' growth.

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DISCOVERY OF NEW TYPE OF EXOPLANETS MADE OF LIQUID METALLIC HYDROGEN

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The study of exoplanets does not only consist in finding them, but also in establishing and understanding their physical characteristics. One of the most important results so far is that many exoplanets might possess internal structures than differ significantly from what is observable in the solar system, like, for example, Hot Jupiters and Super-Earths. In our study, we have created a new diagnostic diagram, the BGP diagram that allows to separate exoplanets according to their possible physical structures. We have also introduced a different physical boundary that allows us to identified a new type of massive exoplanets that are Self-Gravitating (SG). By comparing their mass-radius relation (MRR) with those of other exoplanets, and with low-mass stars like Brown Dwarf, we have discovered that the SG exoplanets may have a structure that is different from any other exoplanet observed so far. Comparison with structure model suggests the SG exoplanets would be formed of liquid metallic hydrogen.

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