The Formation of the Krebs Cycle Molecules in the Simulated Interstellar Medium Sheds Light on Origin of Life

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My research examines if the Krebs Cycle molecules could be formed in the simulated interstellar medium, which would support the extraterrestrial origin of life theory. This theory suggests that the building blocks of life could be brought down from space to the Earth through meteorites or comets. Since the Krebs cycle is a fundamental biological cycle that is utilized by many organisms on Earth, this research will contribute to our further understanding of and provides evidence for the extraterrestrial origin of life theory. We designed 9 sets of experiments which contained specific mixtures of simple compounds such as methane, water, carbon dioxide, carbon monoxide and methanol in specific ratios. We then simulated the conditions of interstellar dense clouds through an ultra-high vacuum machine and irradiation of electrons to simulate the effect of cosmic rays. After the ice analogs were created from the gas on a silver sample wafer, we analyzed the ice through Fourier Transform Infrared Spectra. In addition, the samples were sent to another lab for further data analysis including mass spectrometry and column chromatography. From the infrared spectra analysis it was evident that target Krebs cycle molecules were formed, but with the additional data analysis we confirmed that all of the Krebs cycle molecules were formed in all of the 9 experiments. The results support the extraterrestrial origin of life theory and other questions of biological molecule formation in the interstellar medium.

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