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CHALLENGES FOR TERRESTRIAL AND EXTRATERRESTRIAL ORIGINS OF LIFE

Abstract

B.B. TEWARI E-mail: brijtew@yahoo.com The bioorganic compounds from which first life originated were formed in the primeval Earth atmosphere or extraterrestrial atmosphere like comets is still a subject of controversy.

First group of scientist believe on terrestrial origin of life. The Miller-Urey experiment requires reduced carbon and hydrogen compounds, such as methane, carbon monoxide and ammonia in the atmosphere of primitive Earth. Most Geochemists believe that the Earth crust was not reducing when life originated. The notion that comets, meteorites, and asteroids delivered reduced organics to the surface of the primitive Earth is not favored because when these bodies hit the Earth's atmosphere, the organic compounds present on them would have been pyrolyzed. Therefore it will be assumed that life originated on primitive Earth.

Second group of Scientist believe an extraterrestrial origins of life. The comet and asteroid dust deliver tons of organics to the Earth every day, therefore this flux of reduced carbon from space probably played a role in making the Earth habitable. It was suggested that the capture of comets by the primitive Earth provide the molecule precursors necessary for the eventual appearance of life on our planet.

Third group of Scientist believe is midway between first and second group. The biotic raw materials include the biotic elements (e.g. C, H, N, O. P, S. Fe, Mg, etc.) the simple biotic molecules (eg. H2O, NH3, H2, CO, CO2, H2S, S, SO2, CH4, etc.) and minerals containing Si, Ni, Fe, P, S are available in small or large amount in both terrestrial and extraterrestrial sources. The percentage contribution of bioorganic compounds from terrestrial and extraterrestrial source for the origins of life is still a subject of debate.

In the present work cobalt, stannous and tungsten ferrocyanides were synthesized and characterized by elemental and spectral studies. Interaction of 2-aminopyridine, 3-aminopyriodine and 4-aminophyridine on above mentioned metal ferrocyanides were studied at neutral pH (7.0+0.01) and room temperature (30+1 oC). The progress of interaction was followed spectrophotometrically by measuring the absorbance of substituted aminophyridine solutions at their corresponding max. The overall interaction trends is found to be in the order of 3-aminopyridine¿ 4-aminopyridine¿ 2-aminophyridine.We expect that these interaction processes may have protected biomolecules from degradation during course of chemical evolution on primitive Earth. Present study support the hypothesis of terrestrial origins of life. Detail will be presented.