

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Astrobiology and Exploration (6)

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CONTROVERSY ON THE AVAILABILITY OF BIO-RESOURCES NEEDED FOR ORIGIN OF LIFE
ON PRIMITIVE EARTH

Abstract

The origin and dispersion of the life in the universe is a long debated scientific and philosophical issue. It is also one of the greatest mysteries challenge remaining for the origins of life community. The first life originate on primitive Earth or came from space is still a subject of debate. According to first hypothesis first life originated from terrestrial sources. The notion that comets, meteorites and asteroids delivered reduced organics to the surface of primitive Earth is not favoured because when these bodies hit the Earth atmosphere, the organic compounds present then would have been pyrolyzed. According to second hypothesis first life originated from extra-terrestrial sources. The current research demonstrated that organic compounds, which are the components of the genetic code in modern biochemistry, were already present in the early solar system and may have played a key role in the life origin. According to third hypothesis which is mid way between first and second hypothesis. The atmosphere of early earth could have been environment where prebiotic molecules were formed efficiently. Alternatively, these compounds could have been delivered to early earth by exogenous sources. During the course of chemical evolution, cyanide ions were found in abundance, cyanide is a strong ligand and formed complexes with metal ions. Double metal ferrocyanides are mostly insoluble in water could have played an important role as adsorbents, ion-exchangers and photosensitizers. Cadmium, cobalt and nickel ferrocyanides were synthesized and characterized by elemental and spectral studies. Adsorption of 2,4-dinitroaniline (2,4-DNA) and 2,4,6-trinitroaniline (2,4,6-TNA) on cadmium, cobalt and nickel ferrocyanides have been studied at neutral pH (7.0 \pm 0.01) and at a room temperature (30 \pm 1C). The progress of the adsorption was followed spectrophotometrically by measuring the absorbance of amino acid solution at their corresponding max. The adsorption data obtained at neutral pH is fitted in Langmuir adsorption isotherm. The adsorption behavior of the studied substituted anilines follow the order 2, 4, 6 - TNA \gt 2, 4 -DNA, with all three metal ferrocyanides studied. Cadmium and cobalt ferrocyanides were found to have maximum and minimum uptake capacities for the both adsorbates. The present study suggests the vital role of double metal ferrocyanides in the stabilization of biomolecules from degradation on primitive Earth. This study also supports the hypothesis of terrestrial origin of life.