

The chemical evolution that was caused by adaptability of electronic structure on carbon atom

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By applying concept of behavior to organic molecule, chemical evolution can be explained as follows.

A carbon atom has many possible electronic structures. Organic molecule possesses adaptability to surroundings by the characteristics of carbon atom. On the other hand, the energy of temperature is distributed equally to every particle. Brownian motion of a small particle is large. Hydrogen bond of water gives liquidity. The thermal motion randomizes neighboring molecules. Possible reaction among randomized combination carries out a trial-and-error. But the result of reaction affects the next reaction. Chain of reactions in the aqueous medium takes place. Thus, chemical evolution occurs along a course of the time.

Experiments show that membrane together with iron carbide is produced from carbonated water and iron (Karasawa 2010). Time is needed for the synthesis of organic molecule together with oxidation of iron carbide. Membrane is made from organic the molecules. Macroscopic structure of the membrane is formed at surface of water or at boundary on a bubble. It becomes a compartmental boundary, and it has a life span.

Water of spiral structure penetrates through a hole of the membrane. A spiral thread of molecule is made at the hole in the membrane. A primitive protein could be made by this way. The thread of protein is obtained by dehydration of the amino acids that is made from the carbon that bonds with amino and carboxyl group. It was able to make the mold that reproduces the thread of protein. Forming of protein in membrane makes the membrane robust. The thread of protein becomes three dimensional form, if it is released to the outside.

Existence of creature depends on the reaction for production. It also depends on the system that supports those reactions. Evolution of creature depends on inheritance of those reactions. R. Shapiro described why nucleic acids were not formed by prebiotic route. The reason is that there are vast numbers of substances those would react preferentially than the nucleic acids (Shapiro 1984). R. Hengeveld wrote a helpful paper for the scientific study on origin of life (Hengeveld 2007). However, such scientific consideration is lacking of historic consideration. The change by activity affects the next reaction. As the result of natural selection, a relationship between the demand and supply is achieved by a biochemical reaction.

Establishment of replicator is not indispensable condition of the first creature, because similar existence is produced by the similar circumstances. The existing biochemical reaction fits to the environment to sustain metabolism. A succeed mutation has to be fitted to the situation. The functional protein for reaction such as enzyme has the specificity that reacts with only special molecule, and it may form metabolism. The proteins and creature was evolved dialectically. The theory of metabolism-first is possible to explain the beginning of replicator as follows. A primitive protein is reproduced in the cell from primitive RNA that is made as a mold of spiral thread of the protein. Primitive DNA is made as the mold that reproduces the RNA in the cell. When a cell becomes big by the dialectical processes, the range of Brownian motion becomes narrow. Then, it stores long thread of DNA in a nucleus, and the nucleus possesses facilities for the protoplasmic movement in a cell. The cell with a nucleus makes possible to implement many facilities in it.

The central dogma that heredity depends on DNA (Crick 1970) is available after the evolution of replicator. The first life differs from today's creature. Products depend on the factory, and the factory depends on the products. Both evolved dialectically. Herbalists (535-475 B.C.) is telling us that everything is changing at all the time. The change is the law of life and the universe. Although similar event takes place again, the same event does not happen in real world. Every material possesses individual history. Not only scientific approach, but also historical approach is helpful to understand every evolution.

References

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