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Article 11. Biochemistry in a 'life' cell V.S. Abiotic Chemistry

Reaction/一个生命细胞中的生物化学反应与无生命的化学反应

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Latest revised on 26/05/2023.

As discussed in another article [1], for the chemistry reaction between molecule A and molecule B, only when the active chemistry bonds of molecule A collides with the active chemistry bonds of molecule B, chemistry reaction occurs, so molecule A and molecule B need to collide at specific intersection angle (or angles) of spacial magnetism curves between two molecule A and B to make chemistry reaction happen. The critical energy level to break chemistry bonds in biological molecules [2] is required to be much higher than the normal temperature (between 15 and 25 °C), so usually the dead biomass is only decomposed by microbes in ecosystem and otherwise the dead biomass need to be decomposed by burning.

The molecular structure of both bio-molecule (such as DNA or RNA) and abiotic molecules can be changed by external electromagnetic waves. However, both change is not identical. External electromagnetic waves is perceived by cells or virus firstly, and then cells change the molecule structure of DNA (or RNA) actively through cell division process. In comparison, abiotic molecules is change by external electromagnetic waves passively or destructively. Consequently, abiotic molecules usually require higher intensity of electromagnetic waves to make changes than biotic molecules. For example, the required intensity of electromagnetic waves must be higher to break the chemical bond of 'dead' DNA molecule than the 'living' DNA molecule in cell.

Why does this difference occur? Because a living cell is able to identify or recognize the molecular structure of chemical molecule, so that cell actively and selectively binds different molecules at the intersection of active chemistry bonds between them to make chemistry reaction happen, rather than making different molecules collide each other randomly as abiotic chemistry reaction. The 'living' organ utilizes bio-energy to drive chemistry reactions, emitting bio-electromagnetic waves, called life signals; whereas the abiotic chemistry reactions uses inner energy to drive or initiate.

Consequently, the biochemistry composition of molecules is not the only consideration for cell to digest, but also the molecular structure of molecules which

can be identified or recognized by cell. This provides the theory basis of organic synthesis in food science or bio-medicine production for future research purposes.

Table 1. Comparison between biotic chemistry reaction and abiotic chemistry reaction in biological molecules.

	Biotic Chemistry Reaction	Abiotic Chemistry Reaction
Energy Driven	Bio - Energy	Inner or Thermal Energy
Temperature to Break Chemical Bonds	Ordinary Temperature	Heated Temperature
Collision between Molecules	Selective Collisions by Intelligence	Random Collisions between Molecules
Bio-Signals Required	Yes	No

Please note: This is the revised materials in book “Proceedings for Degree of Postgraduate Diploma in Environmental Science (3rd Edition).” published in 2016. Revised on 31/12/2020; Thirdly Revised on 30/01/2022. This journal article is previously published as: Liu Huan. (2021). Article 7. Biochemistry in a 'life' cell V.S. Abiotic Chemistry Reaction. Journal of Environment and Health Science (ISSN 2314-1628), 2021(02)., which is converted into Journal of Quantum Physics and Materials Chemistry (ISSN2958-4027) . Both Journals belong to the same publisher, Liu Huan. The previous journal article is closed to the public, but the previous reference is still valid. Latest revised on 12/05/2023 a;b; 26/05/2023.

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- [2]. Textbook of Structural Biology. Anders Liljas etc. 苏晓东译。科学出版社。ISBN 978-7-03-036392-3.
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