Biological transmutations

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Over the past two centuries a large number of experiments with animals, seeds and bacteria, have demonstrated that biology is not only a chemical process, but also a nuclear one. It has been demonstrated that some minerals transmute into other minerals. With the development of low energy nuclear reactions (cold fusion), this topic, is back in the scientific agenda. Very few scientists work in this field, but its importance is such that its further development is crucial.

Keywords: Biological transmutations, cold fusion, low energy nuclear reactions.

Introduction

AT the end of the 18th century Antoine Lavoisier demonstrated that chemical elements cannot be created nor destroyed. He performed a number of chemical experiments that showed that various elements can combine with each other, but without any change in their elemental compositions. This has been the credo of science until the discovery of radioactivity at the end of the 19th century and later artificial radioactivity. However, for everyone now, it is out of the question that nuclear reactions can occur outside the nuclear world of radioactivity and high-energy physics. The announcement by Stanley Pons and Martin Fleischmann[1] in 1989 that it was possible to produce nuclear reactions at ambient temperature by electrochemistry reopened the door of biological transmutations. The work of several pioneers[2–7] has been totally ignored by the scientific community as their observations were against the known laws of physics. Fortunately, Vysotskii and Kornilova[8], have now shown with modern spectroscopic techniques transmutation with bacteria. I myself have been convinced of the reality of the phenomenon thanks to experiments showing that transmutations occur in seeds and bacteria.

Research during the 19th century

In 1799, the French chemist Louis Vauquelin[2] became intrigued by the quantity of lime which hens excrete every day. He isolated a hen fed it a pound of oats, and analysed the eggs and faeces for lime (CaO). He found that five times more calcium was excreted than was consumed. He observed, not only an increase in calcium, but also a subsequent decrease in silicon. He is certainly the first scientist to have demonstrated the biological transmutation of silicon into calcium. Vauquelin concluded that a loss of only 1.274 g of silica cannot account for an increase of 14.118 g of limestone. He reported that lime had been formed, but could not figure out how it happened. Furthermore, he encouraged other scientists to replicate his experiment.

In 1876, Von Herzeele[3], a German pharmacist published the first of a series of books in which he showed that plants continuously create material elements. From 1875 to 1883, in Berlin, he conducted 500 analyses with different types of seeds – clover, crimson, vetch, rapeseed, barley, watercress, bean, white beans, kidney beans, turnips, rye, peas lupine, coltsfoot and angelica. A typical experiment was the determination of the variation of calcium, potassium and phosphorus in *Vicia sativa* during germination with or without the addition of mineral salts in distilled water. He even showed that the addition of various calcium salts to the medium increased the formation of potassium. The addition of K_2CO_3 increased the formation of calcium. Von Herzeele concluded that 'Plants are capable of effecting the transmutation of elements'. His publications outraged so much the scientific community of the time that they were removed from libraries. His writings were lost for more than 50 years until about ca. 1930, when a collection was found by accident in Berlin by Rudolf Hauschka, who subsequently republished Von Herzeele's books.

Research during the 20th century

Pierre Baranger[4], a French scientist, was professor of organic chemistry at the famous Ecole Polytechnique, and head of the Laboratory of Chemical Biology. He became intrigued by Herzeele's experiments, but thought that the number of trials had been too limited and the precautions against error were insufficient. Baranger decided to repeat the experiments with all possible precautions and a very large number of cases, which would allow a statistical study. His research project from 1950 to 1970 involved thousands of analyses. Baranger verified the content of phosphorus, potassium, calcium and iron of vetch seeds before and after germination in twice-distilled water to which pure calcium chloride was/was not added. Hundreds of samples of 7–10 g each were

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selected, weighed to 1/100th mg, graded and then germinated in a controlled environment[4].

Baranger found an increase of 4.2% in calcium and 8.3% in iron, and subsequently a decrease in phosphorus by 1.9%, and of potassium by 1.1%. Interestingly, the addition of $MnCl_2$ increased the amount of iron produced.

Louis Kervran is certainly the most well-known scientist having worked in the field of biological transmutations. He had a broad knowledge of plants, geology and also of nuclear science. His findings have been published in French in ten books, some of which have been translated in English[5]. Kervran collected facts and performed experiments which showed that transmutations of chemical elements do indeed occur in living organisms. He pointed out that the ground in Brittany contained no calcium; however, every day a hen would lay a perfectly normal egg, with a perfectly normal shell containing calcium. The hens eagerly pecked mica from the soil, and mica contains potassium. It appears that the hens may transmute some of the potassium to calcium.

From 1960 to 1980, Kervran reported the astounding results of his research showing that living plants were able to accomplish limited transmutation of elements. It is clear that the calcium increased with germination, whereas phosphorus decreased. There are certainly other elements that played a role, but they were not analysed in this experiment.

Zündel[9] was a Swiss scientist, head of a paper company, and a chemical engineer at the Polytechic School of Zurich (ETH Zurich) in Switzerland. Following Kervran's observations, from 1970, he studied germinating seeds and observed a 54–61% increase in calcium. In another experiment, he grew 150 oats seeds (flämingkrone) in a controlled environment for 6 weeks. Then 1243 sprouts were analysed by atomic absorption spectroscopy for magnesium and calcium. Potassium was found to decrease by 0.033%, calcium increased by 0.032% and magnesium decreased by 0.007%. The variation of magnesium was not significant, but the decrease in potassium balanced the increase in calcium. In 1972 with oat seeds, he observed an increase of calcium by 118%, a decrease of magnesium by 23% and potassium by 29%.

Studies at present

Vladimir Vysotskii[8] is a scientist from Ukraine. He started working on biological transmutations in the 1990s. He is well known for using modern analytical techniques. In particular, he used Mössbauer spectroscopy, very sensitive to Fe-57 to measure its production. In natural iron, Fe-57 represents only 2.2% of the total iron content. The main isotope of iron is Fe-56, which represents 91.7%. Measuring Fe-57 is also easy by mass spectroscopy, since there is no possible interference with another element. The experiments conducted by Vysotskii and his group[4] were performed with bacteria capable of developing in heavy water. They chose *Bacillus subtilis*, *Escherichia coli*, *Deinococcus radiodurans*, as well as a yeast culture *Saccharomyces cerevisiae*. When manganese was introduced with $MnSO_4$, a clear spectrum was measured, indicating that manganese had been transmuted into iron. The authors analysed the material by time-of-flight mass spectroscopy showing that the mass 57 peak was as large as that of mass 56. This is another confirmation of the production of Fe-57. Vysotskii and co-workers have also looked at another reaction

$$\text{Na-23} + \text{P-31} \rightarrow \text{Fe-54}.$$

In natural iron, Fe-54 represents only 5.8% of the total iron content. The bacteria developed in a medium without iron, and after development they measured Fe-54 as large as Fe-56.

In similar experiments they observed the following reaction

$$\text{Cs-133} + \text{H-1} \rightarrow \text{Ba-134}.$$

To reduce radioactivity, they conducted experiments with synthetic microbiological cultures, which were up to 20 times more effective than standard microbiological cultures. It was shown that Ba-140, which is radioactive with a half-life of 12 days, transformed into Sm-152, which is stable with the possible following reaction

$$\text{Ba-140} + \text{C-12} \rightarrow \text{Sm-152}.$$

Interestingly, Cs-137, which is radioactive with a half-life time of 30 years, transmutes within 310 days into stable Ba-138

$$\text{Cs-137} + \text{H-1} \rightarrow \text{Ba-138}.$$

This work is certainly the best proof of biological transmutations.

Conclusion

There is no theory capable of explaining biological trasmutations, but most likely low energy nuclear reactions (LENR) will help better understand these new types of nuclear reactions in solids, be it in a crystalline form like in LENR or in living organisms like in biology. The consequences of this body of research are of vital importance to the fields of science, agriculture, health and medicine; biological transutations must be studied in depth. A full historical review is available in Biberian[10].

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