A BRIEF HISTORY OF THE DEVELOPMENT OF THE KOCH SYNTHETIC ANTITOXINS

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This therapy started as an investigation of the toxins that cause convulsions after parathyroidectomy and in eclampsia. The purpose was to devise a means of destroying poisons that contained the guanidine and imidazole groups. Since the poisons of these types developed while the oxidations were seriously impaired, we immediately set to work investigating methods of harmlessly oxidizing them within the body. We chose to use the normal oxidation mechanism, but first had to master it.

It might be stated in outline that the important steps cover some cardinal contributions to physiology. They also reduce the clinical features and the essential pathologies of the broad field of disease to a single basic fault in tissue chemistry. They include the application of this system of direct oxidation of sugar and fat to the burning of pathogenic poisons whose structure we identified and whose origin we located in residual focal infection. These poisons we credited also with producing the various allergies, degenerative diseases, and cancer. They are identical with the products of the same germs active in acute infections.

It must be acknowledged at the start that the burning of sugar, and especially aerobic glycolysis, is still regarded as a mystery. Back in 1914, when we began this research, practically no pertinent facts were known and, besides, the science of photochemistry that deals with the catalysis of such processes was in its early infancy. However, we formulated a system of aerobic glycolysis that worked out perfectly on paper and, to our extreme satisfaction, it served as a guide to the chemistry of immunity. **As photochemistry developed and various laws controlling catalytic activities were I earned, the correctness of our working scheme has been amply verified. It checked up physiologically, too, and so it stands a good chance of being the correct interpretation.**

In order to bring the oxidations involved within the field of photochemistry, we outlined the breakdown of glucose and fructose as accomplished by dehydrations with the formation of double bonds between carbon atoms. This provided free valencies able to activate oxygen as well as activate ethylene and carbonyl groups to take up the activated oxygen. Several important highly unsaturated structures with powerful catalytic properties were thus produced.

At first the simplest procedure of glycolysis imaginable was tested out. Thus glucose, by a single dehydration, makes a cyclic molecule, " Inosite," which, as pictured below, may undergo full dehydration into the hypothetical substance I call Hexylene. And this can either fully saturate with peroxide oxygen and break up directly into six molecules of carbon dioxide or it may take up either two or three molecules of peroxide oxygen and split into two molecules of Malonide or three molecules of Glyoxylide, as depicted below.

Since the hypothetical Hexylene is not practical experimentally, we went back to the next most unsaturated structure that could be produced synthetically and that could also yield the Hexylene under proper conditions. The substance we worked with is 1:4 Benzoquinone. Let us call it BQ for short. This substance conforms to the rules of structure requisite to immunogenesis as I have formulated them. So it was put to work to see how much it could boost the oxidations of surviving tissues before and after they were poisoned by the pathogenic negative oxidation catalysts. It proved out very satisfactorily and without delay it was used to treat the sick in catalytic dilutions. We used one or two cc. of a dilution of 1 X 10-(2) to 1 X 10-(36) to find the most active solution. Thus BQ was our first synthetic antitoxin.

We next employed the two transition forms, Malonide and Glyoxylide and its closely related Ketene, since these bodies are also intermediaries in the other two schemes of aerobic glycolysis, which we outlined. They were all found to act similarly in many respects both physiologically and therapeutically. With these four compounds we studied the recovery processes in the serious acute and chronic infections and in the so-called incurable diseases like coronary thrombosis, Berger's disease, multiple sclerosis, progressive muscular atrophy epilepsy, cancer, and certain forms of insanity. In these conditions and also in the gumma stage of syphilis, in tuberculosis, and leprosy, the recovery processes were found to be essentially similar, both in regard to their periodicities and in the order of correction of the symptoms and structural changes.

The first observations were made in 1917 in cancer associated with sarcoma. Considering our great ignorance the patients did remarkably well. Thereafter, the most thorough investigations possible were made on every incurable that came for help at our Detroit Clinic.

The mechanism of allergy production had to be formulated also. It too, is still regarded a mystery, but we outlined a process of allergenesis along photochemical lines that meets all the facts, including the specificity and the failure of physiological control of the hyperactivity that constitute the disease. Most important of all, when the catalysts were employed clinically, they worked very efficiently and the recoveries followed the same program as the recoveries secured in all other diseases. It seemed that we could best explain allergenesis as a matter of energy transfer accomplished by the fluorescence of the allergenic substance. The energy of the exothermic reactions going on in the cells was thus transferred into the chemical processes of such functional units as were able to accept such energy. The specificity of energy acceptance resides in the similarity of energy emission range and energy absorption range of the fluorescent substance and the functional unit. The energy accepted passes into and boosts its chemical processes and functional activity; and so the contractile, secretory, reproductive, or conductive units are forced to functionate beyond physiological control, producing the bronchial spasms and hyper-secretion of asthma, the cell multiplication of cancer, the spasms, inhibitions and fixed ideas of insanity.

An examination of the chemical structures, which we identified as the intermediaries that catalyze aerobic glycolysis, yields several characteristics which may be stated as the rules of structure that determine immunity. These are the following: **The molecule shall be as small as possible. There shall be no amino-nitrogen present in the molecule. A carbon atom shall be present which shares two ethylene linkages or forms a part of ethylene and a carbonyl group or it shall be attached to hydrogen or to a hydroxyl group that can be removed so as to form either of the above structures.** We checked up on a series of compounds that possessed these qualities and found that they served the tissue oxidations in vitro. When given in catalytic doses to patients suffering from acute infections, the response was rapid. The chronic infections, allergies, and malignancy responded with a rapidity inversely proportionate to the length of time the condition had been established in the patient and his ancestry.

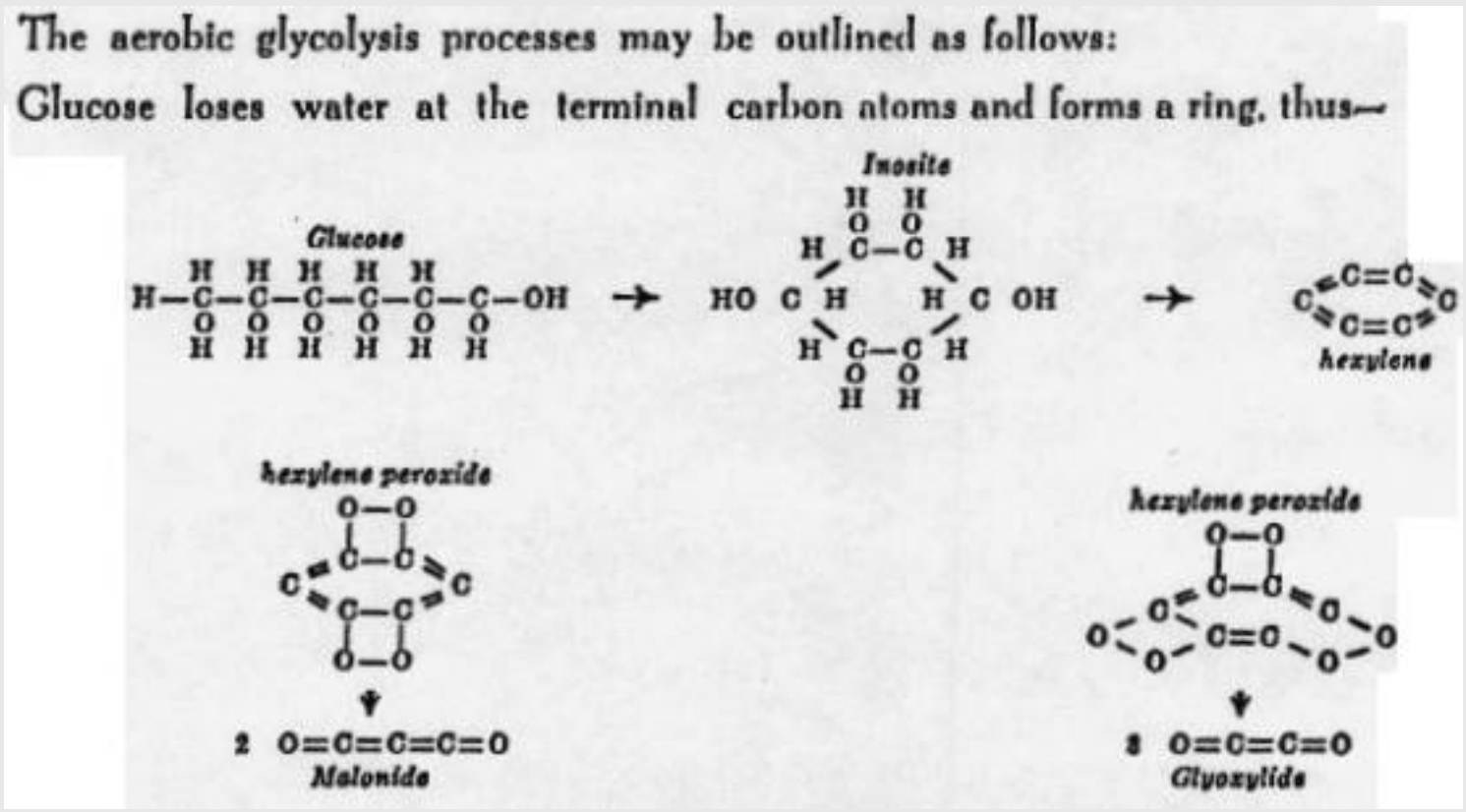
With recovery the general vitality and nutrition improved very impressively. In order to ascertain if or not, only such molecules as may play a part in aerobic glycolysis possessed these curative powers, we prepared and tested propargylic aldehyde. It possesses an acetylene group which undergoes change yielding a carbon atom possessing two sets of double bonds and thus it conforms with our rules of chemical structure that provide protection against disease poisons. This substance shows splendid curative powers in disease showing rapid tissue necrosis. **We concluded, therefore, as early as 1930, when this substance was tested out, that the oxidation catalyzing power resided in the free valencies of carbon and**

oxygen atoms when arranged according to these rules, yet the general structure of the molecule influences the efficacy in important respects.

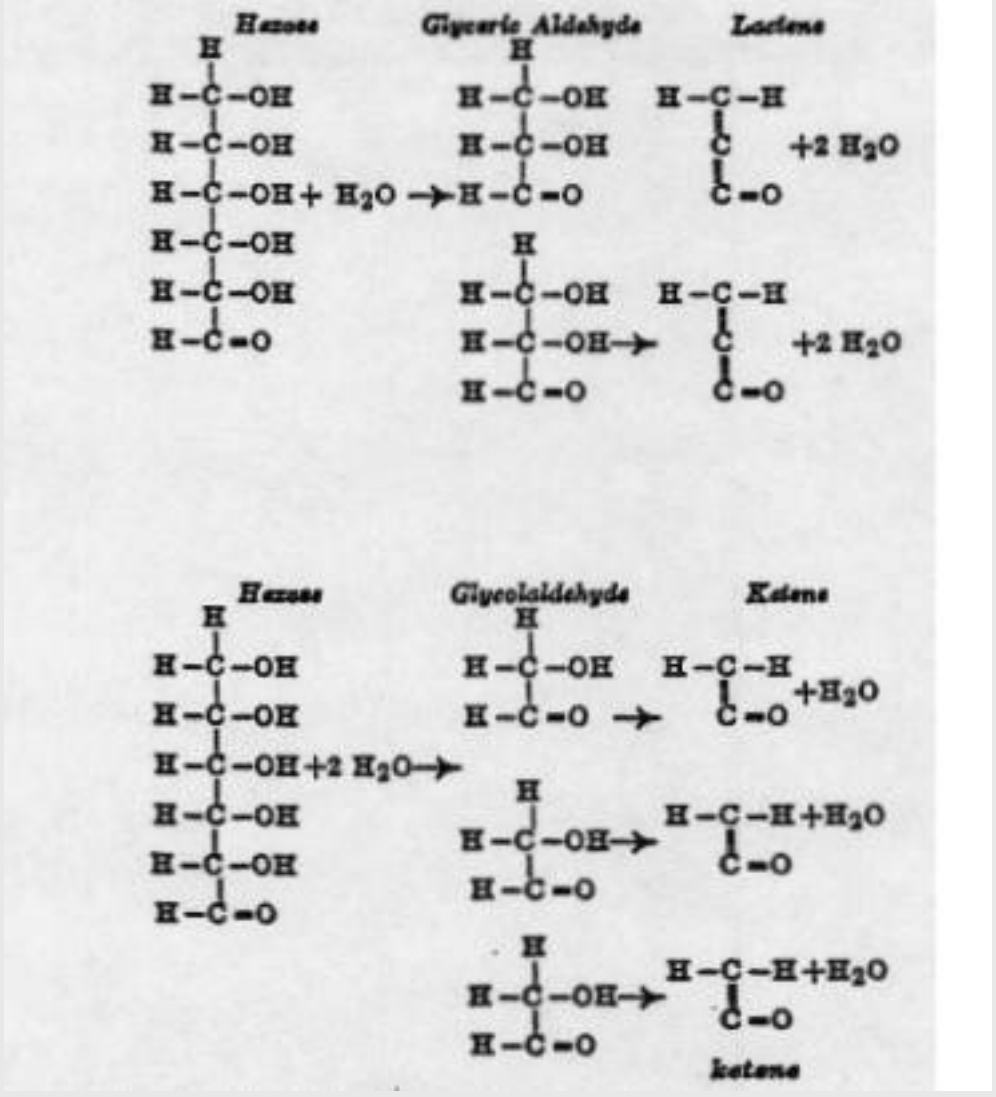
After the therapy was thus reduced to something like an exact science, we instructed favorable European cancer institutions in our work. In 1935 the Cancer Institute of Louvain University, under the direction of Professor Maisin, adopted it for scientific research and clinical use and they have made some splendid contributions in the meantime many American physicians have done nobly in the service of the afflicted and in accumulating data of great value. So today, not only in our hands, but also in the personal experience of many astute observers, the great field of incurable disease has been attacked successfully by a single therapeutic principle and thus the singleness of the basic cause of disease in general has become evident.

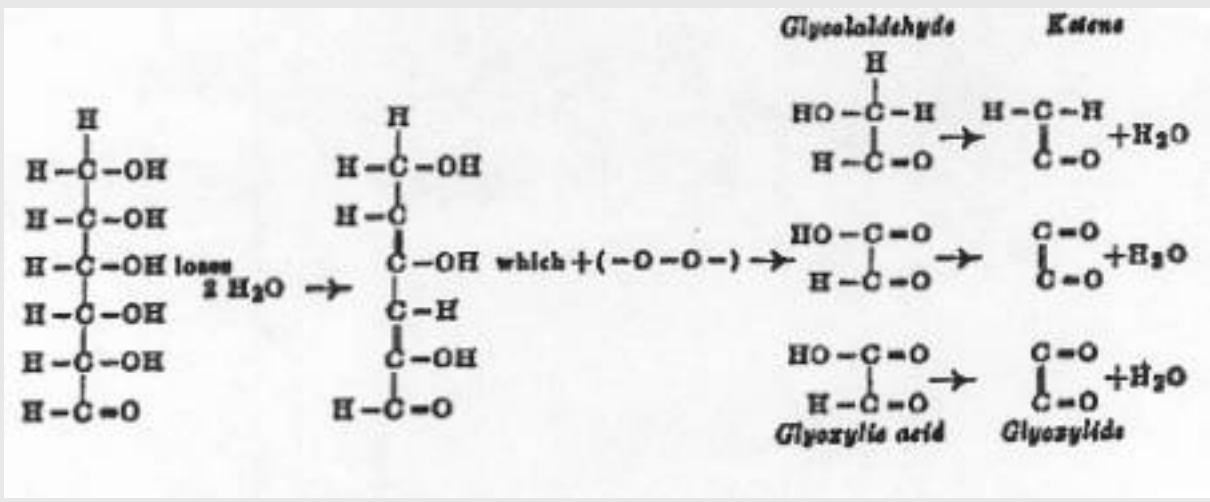
We described the periodicity of the recovery process as early as 1920. It seems that this feature had escaped detection hitherto. Likewise the pre-growth toxic period, which we described about that time, had also escaped detection. It also manifests its symptoms with the same periodicity as the recovery process. These observations aroused very little interest except in Dr. Douglas Webster, Radiologist of the Middlesex Hospital, London, who investigated the periodicity of the recurrence of cancer, and found that his periodicity ran very close to ours. They most likely are identical, for the time lost in recognizing metastases after they become located would require a period of three weeks, or even nine weeks. Furthermore, we have shown that the recovery process is the reversal of the pathogenesis and so the same periodicity should be expected. This is an extremely important matter in a study of many thousands of case histories covering many years. Webster found that cancer invariably returned after operation or irradiation, either at a periodicity of thirty-three weeks or half thirty-three weeks. So accurate is this phenomenon that he could predict the death of patients very closely. In the same way we have been predicting the recovery of patients quite closely under our treatment for the last twenty years. Webster has also been able to predict the time of return of epidemics, influenza, etc., for they follow this periodicity. Thus the periodicity features of disease are cosmic phenomena ultimately. All photochemic phenomena are essentially periodic. They are electronic behaviors that follow definite laws and, although their periodicity comprises very short units, they accumulate in "overtones," so to speak, that constitute the greater cosmic events.

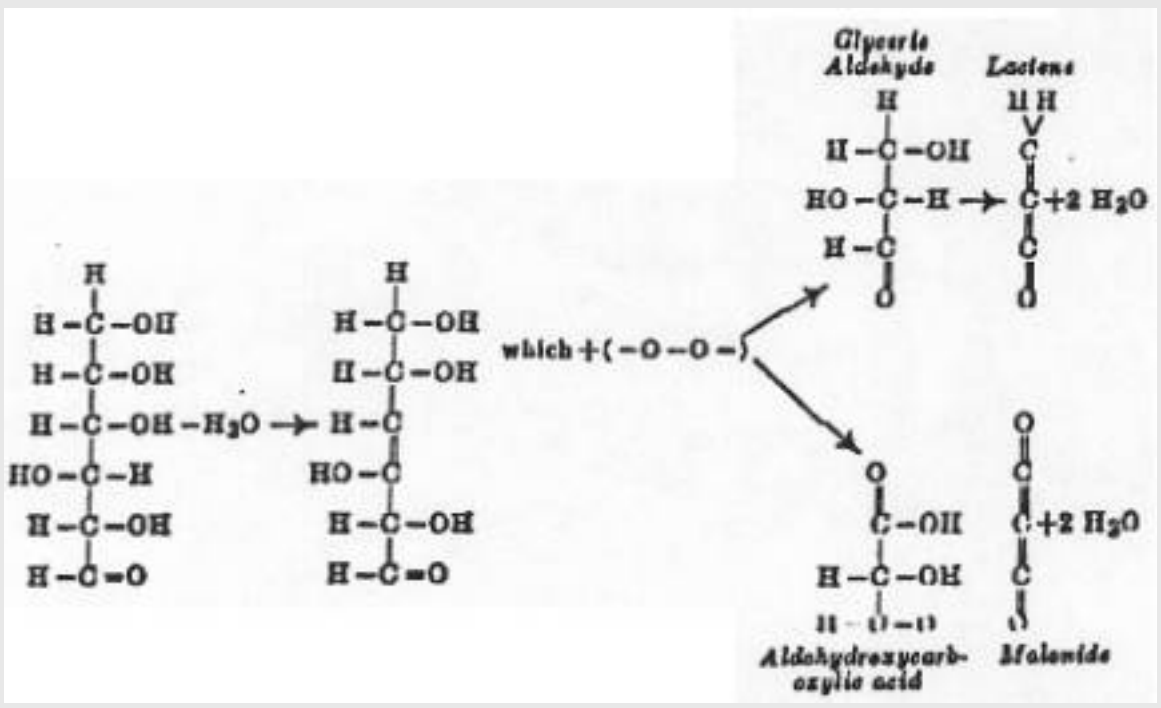
In a little over a quarter of a century, therefore, we have secured and systematized the data that give a fundamental and scientific conception of disease and its processes both with regard to their genesis and correction. At the same time we have demonstrated the correctness of this conception by the only worthwhile testâ€”the true cure of the hitherto incurable.



The second, third, fourth, and fifth systems proceed as follows:







The history of the professional aspect of the work is discussed in a separate volume. **It might he stated that Dr. Mitchell, one of the country's foremost surgeons, when President of the Board of Trustees of the American Medical Association, understanding that the financial interests that control organized medicine would suffer severely when our treatment undergoes general adoption, wrote the following encouraging message as long ago as 1924:**

"I shall be guided by Dr. L. in the use of the material. Have been watching his cases and am convinced that whatever the substance is, it is efficient. I had the pleasure of reading your article in the October number of "Cancer" and it is certainly the most intelligent and enlightening discussion of the subject I have ever read. For years I have been convinced of the utter uselessness of surgery in true cancer cases and have made myself disliked somewhat by my opposition to surgeons going about the country lecturing upon a subject of which they themselves knew nothing. I hope that a little more time will prove that your work is really an epoch making work and that you will ultimately secure the full credit and profit to which your service entitles you."

Dr. Mitchell's hopes will come true, and humanity will have free access to this service only when the profession becomes sufficiently enlightened to properly appreciate the work. This time is very close at hand, for confirmation of the principles we have taught for years are coming from several sides. The most noted Tuberculosis experts are adopting our vegetarian diet. The curative position of activated prothrombin, which we demonstrated conclusively in 1920, is being investigated now at Harvard University. The destruction of carcinogenic poisons by oxidation that we demonstrated so many years ago, is just now being observed at the Rockefeller Institute. Even a book entitled, "The Treatment of Cancer and Its Allied Diseases," is now advertised by the American Society for the Control of Cancer.

Thus the constitutional nature of cancer is becoming recognized even though the proponents of the theory of local treatment as the proper approach do not like to admit it. We published our book, "Cancer and Its Allied Diseases," in 1929 and demonstrated the success of constitutional treatment for the most part in cases that failed to respond to the local treatments in vogue. This book was published to demonstrate the fundamental constitutional nature of the disease and the period of personal and hereditary toxic changes that precede the appearance of the cancer growth. We showed that this pre-growth toxic phase, which expresses itself as so many diseases entities, classifiable as allergies that can be cured by the same oxidation catalysts that cure cancer. We are happy to find that our efforts have not been in vain and that the common sense view of the matter promises to be adopted eventually.