

## SCIENTIFIC SUPPORT OF DR. KOCH'S RESEARCH

In 1924, Dr. C. W. Allen, Professor of Medicine, Tulane University of Louisiana, personally investigated the cancer research of Dr. Koch. Upon the completion of this investigation he prepared a report on his investigation and presented it to his local medical society, the Orleans Parish Medical Society, which was affiliated with the American Medical Association through his State Medical Society.

Based upon Dr. Allen's personal investigation of the Koch Cancer Treatment and the favorable information he had learned about Dr. Koch and his cancer treatment, he contacted several doctors in New Orleans to tell them of his investigation. Finally on April 27, 1925, he read his report, *SOME INFORMAL REMARKS ON THE TREATMENT OF CANCER*<sup>1</sup> to the Orleans Parish Medical Society. This report included a brief history on how he became interested in Dr. Koch's cancer research and treatment and the results of his investigation. In this report Dr. Allen said:

Last October a patient of mine suffering from an inoperable cancer of the rectum asked my advice about the Koch treatment. I strongly advised him to have nothing to do with it, that it had been investigated and pronounced worthless, and that I regarded it as a fraud. He, however, was determined to go to Detroit and consult Dr. Koch. At that time he was emaciated, weighing less than a hundred pounds and was so weak that he had to be carried to the train on a stretcher. Two months later he returned to New Orleans weighting more than 130 pounds, and now weighs 170 and attends to business as usual though there is still some local evidence of his trouble.

I am frank to say that I was amazed at the wonderful improvement in this man. I then called on another patient here who was treated by Dr. Koch at the same time. After talking with these two afflicted persons I was deeply impressed, not only by their personal experience but also by statements concerning others with whom they came in contact while being treated.

A doctor friend whose wife was in a hopeless condition from carcinoma called on me to discuss the matter and as his wife was unable to travel we wired Dr. Koch and received a treatment. In a similar way I received a dose for a hopeless bladder case of Dr. Walther's. With these treatments Dr. Koch sent some directions and information as to what would happen following its use.

The results were so strikingly as he predicted that I became extremely interested.

I looked up Dr. Koch's earlier contributions to medical literature and learned that he had written several creditable papers on the parathyroid glands, such as one would expect from a high class laboratory man. Dr. Koch's method of procedure in the above work was quite original and his deductions and conclusions were at first not accepted but later were

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<sup>1</sup> Printed in the September, 1925, issue of the Journal New Orleans Medical and Surgical Society Orleans, pp 169 - 174.

recognized and the proper credit given him. Paton of Glasgow won a triennial prize by a paper on the same subject in which he gave Dr. Koch due credit for what he had done. These papers will be found in the Jour. Biol. Chem., 1912, XII. 313; Jour. Biol. Chem., 1913, XV. 43-63; Jour. Lab. & Clin. Med., 1919, 1, 299; and Jour. Med. & Surg. Jan., 1918, 1-9; that by Paton will be found in the Quart. Jour. Phys. 1917 Nos. 3 and 4.

In the A.M.A. Journal of 1913, Page 1049, there is a lengthy editorial devoted to Koch's work on the toxic bases in the urine of parathyroidectomized dogs. Dr. Lewellys Barker on the subject of tetany in a paper read at the Southern Medical Association, in 1922, quotes extensively from Dr. Koch. These papers, are however, of more than passing interest in this investigation as it was through the application of methods of reasoning in cancer similar to those that he used in his work on the thyroid (parathyroid gland) that he feels he was able to recognize the specific toxins which formed the basis of his work on cancer.

Dr. Koch had a bachelors', a master's and a doctor's degree before he obtained the M.D. degree to give him clinical opportunities to pursue his study of cancer. He, however, does not care for practice of medicine and is not a clinician but strictly a chemist and physiologist.

I was so deeply impressed with the conviction that Dr. Koch had discovered something that at least brought about certain more or less definite reactions indicating some direct or specific effect on cancer that I decided to go up there and make a personal investigation.

Arriving there December twenty-seventh I began a systematic study of his cases and saw many in all the various stages of reaction. Everything was absolutely open to my closest scrutiny and Dr. Koch was often not present during my examinations though always available to answer all questions, which he did with perfect frankness, both to me and the patients. Results were not always favorable, some were slow and uncertain, and he expressed doubt regarding others. He stated that 20 percent of his cases failed to react. All this was done in a spirit of perfect candor and openness that disarmed at once any feeling of the possibility of subterfuge or evasion that may have existed in my mind.

The most interesting and impressive thing was the cured cases; of these I saw a large number and questioned them most closely. There remained no doubt but that they had had cancer as they all gave a perfect clinical history. Some were primarily inoperable, many had been operated with recurrence, the majority had had the usual routine of X-ray and radium. They all had been hopeless surgically and had come to Dr. Koch as a last resort.

The interesting thing in questioning these cured cases was that they all had gone through the same course with its varied reactions and toxemia as those I saw under treatment. This naturally increased my interest and encouraged my closer study of the phenomena which they presented. While many of these were quite sick it was apparent that they were not running a cancer course. The typical cancer symptoms were slowly giving way to a toxemia in which nausea, vomiting, temperature and prostration were the most prominent features with a progressive diminution of pain and finally just a soreness to remind them of their former suffering. During this time, or as long as the toxemia and temperature persisted there was a steady loss of weight until they were reduced to an extreme degree. As convalescence set

in, recovery was at first slow later more rapid, and many of them told me that their physical condition and general health was better than they had ever enjoyed formerly.

The preparation used is a delicate, synthetic chemical compound clear and colorless. It is injected subcutaneously in one cubic centimeter dose. The treatment is based on the germ theory of all malignancy and upon the theory that the cancer mass is an attempt at protection by the host towards the invading organism. The organisms being killed the cancer becomes a foreign proteid mass which must be absorbed to be removed. The absorption of this mass is a highly toxic process and produces the various symptoms which occur during the treatment; fever, nausea, vomiting, and depression. These symptoms and reactions of the cancer tissue are subject to considerable variation. At times the mass may swell and there may be an increase in all symptoms including pain, in other cases there is an immediate subsidence in the size of the mass and a lessening of pain. The reason for these variations is not well understood. The cancer mass takes on a bluish color and there is an ingrowth of angioblastic tissue during the stage of absorption. As this vascularized tissue contracts frequent small hemorrhages occur and it may require six to nine months for all of this tissue to disappear. Cases that are badly exhausted before treatment, where the mass to be absorbed is very large, or when the heart and kidneys are weakened are not likely to survive the toxic period.

My duty was apparent. I should take some steps to bring this matter to the attention of the profession and I felt that the best means of accomplishing this as well as for further proof for myself was first to treat a few of my hopeless cases here and properly check this work with the aid of the laboratory. This appeared to me to be the best plan of procedure and I accordingly arranged with Dr. Koch to furnish me with as much of his formula as was needed.

My understanding with Dr. Koch was that should any recognized group of reputable physicians make a calm unbiased investigation of his treatment and accord him due credit for having discovered something useful in the treatment of cancer, he would then make the formula public in some way, such as was done with insulin.

I know that a great many of my friends and associates feel that I have made a mistake in going into this subject but I hope that none will question my honesty or sincerity and just as soon as sufficient time has elapsed for me to arrive at a definite conclusion, based on personal experience, for or against the further use of this remedy I propose to make a frank, positive statement of the results. In conclusion I wish now to present a brief summary taken from the records of cases treated.

Dr. Allen then briefly reviewed ten case histories and then said:

I feel that your careful consideration of the above cases must convince you that they have not run a normal cancer course and if Dr. Koch has not discovered what he thinks he has, he has at least found something which profoundly affects cancer tissue and I feel it should be accorded a most liberal investigation both clinically and in the laboratory as it may at least be the beginning of tremendous possibilities.

I have been persistently at work on the two objectionable features in the use of this preparation; its cost and its secrecy. The cost has been substantially reduced and I feel the problem of its secrecy is open to solution.

The meeting was then open for discussion. During the discussion period, the issue of the secrecy of the Koch medication was brought up as if it was the primary issue and only important matter to be considered. However, some of the doctors did admit that many of them did use secret treatments sometimes. The issue of therapeutic effectiveness of the Koch Treatment was over looked by this group of doctors, it being a secondary matter, and as if, the cancer patient future state of health may not really be that important to the doctors after all. It should be noted that at that time Dr. Koch did not have patent protection for his discoveries to prevent unauthorized use and copy of his medications, it being necessary to prove the therapeutic effectiveness of his product through recognized testing of his discoveries before he could get a patent. At about the same time, Dr. Banting did not release to the medical profession or the public his method to produce insulin until after he first received his Canadian patient.

This intolerance of the medical profession dates back to the beginning when the first clinical investigation was started and then quickly terminated in the fall of 1919 by the official cancer committee. Mrs. Edith Fritz, one of the original nine cancer patients to be treated by Dr. Koch during this investigation, improved in the hospital and subsequent recovery from her cancer while she continued under Dr. Koch's personal care. Her recovery could not and would not be accepted by the local Wayne County Medical Society. These doctors, like the New Orleans doctors, wanted to know what the medications were before they would acknowledge the medical recoveries from cancer. The facts of this case were reported as follows.

Mr. Fritts, in his affidavit-letter, briefly tells of Mrs. Fritts' follow up medical care from Dr. Koch while she stayed in Detroit and the final results she received from the use of the Koch treatment. It should be further noted that when Mrs. Fritts left Herman Kiefer Hospital, with her nurse to go to the St. Clair Hotel, she was able to walk from the hospital to the street car and then walk from the street car to the hotel carrying her own suitcase. At the time Dr. Koch released Mrs. Fritts to return home to Toledo she traveled by way of interurban car without the aid of a doctor or a nurse. Her Toledo doctor did report to Dr. Koch on her progress during the recovery period.

Toledo, Ohio  
July 16, 1924

My dear Dr. Koch:

I have had so many inquiries regarding your treatment for cancer from people that have heard of the wonderful cure of Mrs. Fritts that I feel it

my duty not only to you but to the thousands of sufferers from this disease to publicly state just what the results of your treatment were in the case of my wife. ~~April~~

In ~~July~~ 1918, Mrs. Fritts was first taken ill; from then until June 1919, she was examined and treated by several physicians. Her case was diagnosed as appendicitis, colitis and other maladies, but she did not respond to any treatment. At the beginning of her illness she weighed 172 pounds. By June, 1919, she had lost weight constantly, weighing only 97 pounds. At that time I took her to Dr. George Jones, a very prominent specialist. He and his associate, Dr. A. N. Smith, after three days examination decided to call in Dr. Louis Smead, one of our recognized surgeons. At the conclusion of their examination, Dr. Jones informed me that they were agreed that there was a growth in the abdomen, but could not say whether it was malignant or not; **that the only way to determine was by operation.** This operation was performed the next morning by Dr. Smead, Drs. Jones and Smith both being present. After possibly one half-hour Dr. Jones came from the operating room to where I was waiting and informed me **that they had found the trouble to be cancer**, and in such a shape that an attempt to remove it would undoubtedly prove fatal, consequently there was nothing to do but close the wound and keep the patient as comfortable as possible. Both Dr. Jones and Dr. Smith **told me that nothing further could be done; that it was simply a case of but a few months to live.** In about two weeks the wound had healed and we were able to take her home.

From then until October 1919, Dr. Smith called frequently but admitted he could do nothing for her. Early in October I heard of Dr. Koch's treatment and that he was conducting an experimental clinic in Herman Kiefer Hospital at Detroit. Accompanied by Dr. Smith, I went to Detroit and saw Dr. Andries, one of the committee appointed to watch this experimental work. We arranged to have Mrs. Fritts admitted to Herman Kiefer Hospital. A few days later we took her to Detroit, Dr. Smith and her nurse going along. Patient was in the hospital three weeks during which time she received treatment from Dr. Koch. At the time, after some disagreement, it was decided to close the hospital to Dr. Koch's patients, but as Mrs. Fritts was apparently being benefited by the treatment, I decided, if possible, to have Dr. Koch continue to treat her. I saw Dr. Koch and he told me he would continue the treatments if it was possible for her to get to his office. I made arrangements for her and her nurse to go to a hotel. From there they went to Dr. Koch's office at appointed times for two weeks. At that time she had so improved that she was able to return to Toledo (Ohio) on an Interurban car. From that time on improvement was apparent and after several visits to Dr. Koch's (Detroit) office, he pronounced her cured. Today, four years later, she is enjoying splendid health, doing all her own housework, besides enjoying all social activities, weighs one hundred and sixty pounds. A feeling of profound gratitude prompts me to make this statement.

Sincerely yours,

F. F. Fritts (Signed)

F. F. Fritts, being personally known to me, swears the foregoing is a true statement to the best of his knowledge and belief.

John H. Laycock (Signed)

Notary Public

My commission expires: Aug. 9, 1926

Four years later, on April 9, 1928, Mrs. Edythe M. Fritts executed the following affidavit. This was over eight years since she was first treated by Dr. Koch in November of 1919 for cancer at Herman Kiefer Hospital and over five years since she had made a clinical recover from her cancer.

STATE OF MICHIGAN)

) SS.

County of Wayne )

On this ninth day of April, A.D., 1928 before me, a notary in and for the above County, personally appeared EDYTHE M. FRITTS, to me personally known and who being first duly sworn deposes and says that she has taken the Koch treatment, as explained in the affidavit of her husband, F. F. Fritts, and that at this date, April 9, 1928, she is in splendid health and holding a weight of 160 pounds.

Edythe M. Fritts (Signed)

245 Glendale Avenue, Detroit, Mich.

Subscribed and sworn to before me this 9<sup>th</sup> day of April A.D. 1928

Frank J. Powers (Signed)

Notary Public, Wayne County of Michigan

My commission expires: Sep 24, 1928

Mrs. Fritts remained cancer free during the rest of her life. In the spring of 1935, as the result of an accident, she died. At the time of her death, an autopsy was performed and no trace of malignancy was found. It should be noted that Mrs. Fritts' case was also one of the official cases evaluated as part of the subsequent November 5<sup>th</sup>, 1923 investigation conducted by the Wayne County Medical Society Cancer Committee at Dr. Koch's request. This Cancer Committee refused to acknowledge Mrs. Fritts' recover from cancer at this subsequent investigation.

IN 1949 The Fort Worth Star-Telegraph reported on a two month old baby who developed cancer in 1948 which involved 85% of her liver and who was sent home to die by her doctors at the time. The article was titled:

**Once Termed Hopeless Case**

Doctors Convinced That Little Judy  
Overcame Cancer Ailment Herself.

With his article was a picture of Judy and her mother with the following caption.

**JUDY WOWED 'EM --** A rare little girl with even a more rare medical history of cancer, Judy McWhorter, shown with her mother, appeared before a cancer clinic in the Blackstone Hotel. Judy may have cured herself of cancer.

The facts of this cancer case history, treatment and cure was reported in the following signed affidavit of Mr. & Mrs. Otis McWhorter, Jr. dated June 28<sup>th</sup> 1950. Judy now lives in Texas, fifty plus years later. It is a shame that modern medicine is willing to overlook the medical research of Dr. Koch in our country.

### THE McWHORTER AFFIDAVIT

#### TO WHOM IT MAY CONCERN:

In order to put on record the facts we know concerning the illness, treatment and recovery of our daughter, Judnith McWhorter, here in after referred to as just Judy, we make the following statement of our own will and accord, without promise of or hope of any remuneration, and having previously received no remuneration of any kind.

After a normal birth, Judy, before the age of six weeks, showed signs of illness. Her abdomen was enlarged, she was restless, and her face did not show the repose of a healthy baby.

Her physician who was a doctor in good standing, a member of the American Medical Association, and a man whom we trusted and still hold in high esteem, could not find anything wrong with her until his check up and examination at the end of her eighth week. At that time the doctor found her abdomen hard and much distended. During the period from August 20, 1948 to August 27, 1948 a tentative diagnosis of cancer was made and X-rays were given although the X-ray technician stated that it was hopeless to expect a recovery.

By the time Judy was three months old that attending physician and another surgeon made an exploratory operation on Judy's abdomen at which time a biopsy was made. The physicians reported to us that the biopsy showed a high degree of malignancy which involved 85% of the child's liver. They told us that there was nothing that could be done to save Judy's life; that we should take her home and make her as comfortable as possible for the few days that she could live.

Her life expectancy was placed at 21 days. We were told not to remove the bandage from her abdomen lest the stitches burst out. It was the doctor's opinion that the incision in her abdomen would not heal.

For some days prior to this time Mr. Joseph O. Noah, a neighbor and old friend of Mrs. McWhorter and her family, had been advocating the use of the treatment offered by Dr. William Fredrick Koch ... None of us had much confidence in his treatment.

When our doctor was consulted he assured us it was useless. He said he would not give it to his own child under the same circumstances, and that it would be an unnecessary and useless infliction of pain on the patient. He also made the statement that he would believe in the treatment if he could see one case recover from the use of it where a biopsy showed positive malignancy.

It was while we were considering this treatment that Time (magazine) published its defamatory article about Doctor Koch in the issue of September 6, 1948. This article was brought to our attention by both our physician and Mr. Noah. We found it very hard to take Dr. Koch's treatment seriously in the face of such criticism. Nevertheless when we had no other hope and since Mr. Noah made it possible for us to take the treatment without immediate cost to us, we decided to try it.

Dr. Koch's therapy was given by Dr. N. T. Mulloy of Cisco, Texas. The dose was injected into Judy's hip on September 18, 1948. At this time and during the course of Judy's recovery, Mr. Noah took a series of color pictures showing her progress. Previously he had taken two pictures at six weeks of age and before diagnosis of cancer. This series of pictures gives a good idea of her case.

At the time the injection was given, Judy's abdomen was so much enlarged that she could hardly breathe due to upward pressure on her lungs. The circulation on the surface had greatly increased and she had a bluish cast from a diffusion of blood in and just under the skin. Veins under the skin of the abdomen were plainly visible. The abdomen was very firm, even hard. At the time the Koch's treatment was given, Dr. Mulloy expressed no hope of securing a recovery as he thought the case was too far advanced.

Within ten days after treatment Judy showed definite reactions which raised our hopes. Shortly she began to pass large quantities of mucous with bowel movements. She also passed a large amount of water in the normal manner, sometimes requiring as many as twenty diaper changes per day. No medication was used after the injection of the Koch treatment and only minor changes were made in the baby's diet. Apple juice was substituted for orange juice, and Judy liked it. After treatment was given and until recovery was practically completed, only one doctor saw Judy. That was a doctor residing at Azle, Texas, who removed the stitches from the healed incision about the middle of October 1948.

During the early days of the recovery process Mrs. McWhorter reported to the doctor who had previously cared for Judy and who had advised against the Koch Treatment, that she was apparently getting better. He admonished the mother not to entertain false hopes. He said that it was impossible for a dose of any chemical to 'destroy' such a large growth.

On the other hand, Mr. Noah stated that the doctor's remarks showed that he had no conception of how the treatment was to work. He said one might as well say that a small match could not start a large fire and destroy a forest.

Soon Judy began to gain weight and her abdomen rapidly reduced in size and became more soft and pliant so that she could breathe better. The hard growth receded towards the lower right side. By December 25, 1948, she had a healthy and normal appearance as the pictures mentioned before show, but some trace of the growth remained.

Later, about May 12, 1949 I had her examined by a doctor in Paris, Texas. (Mrs. McWhorter told the doctor to make a thorough examination for trouble of any kind.) He could find nothing, after which he was told of the baby's former illness and he could still find no trouble.

On November 11, 1949 Judy and her mother appeared before a group of physicians and surgeons especially interested in cancer who met at the Blackstone Hotel in Fort Worth, Texas. While before this group, more than one doctor examined Judy and nothing was found wrong with her.

Mrs. McWhorter states that a more surprised group of doctors would be hard to find, when they first saw a rosy healthy child rolled out before them after having read a clinical summary of her case.

An account of the meeting with a picture of Judy and her mother was published in the Fort Worth *Star-Telegram*. The piece was headed: '*Doctors Convinced That Little Judy Overcame Cancer Ailment Herself.*'

This, in spite of the fact that all concerned knew the Dr. Koch Treatment had been given and that we gave it full credit for bringing about the baby's recovery. The only excuse we can offer for this is that undue excitement might have been raised by a publication of the true facts.

On February 18, 1950 both parents and Judy attended a meeting of physicians and others at Tampa, Florida. Here Judy was again shown to a group of doctors. These were most friendly to the Koch treatment.

Judy is now past two year old. She has shown a normal growth and development, normal mental development and absolutely no abnormalities that we are aware of. She is a very active, mischievous and friendly. She has had practically no illness after taking the Dr. Koch treatment and recovering from cancer.

Witness our signatures.

Mr. O. McWhorter Jr., Father  
Mrs. Otis McWhorter Jr., Mother

State of Texas . . . County of Park . . . Sworn and subscribes to  
before me this 28<sup>th</sup> day of June, 1950.

Jim Bob Nation  
Parker County, Texas  
Notary

One more example on how the medical associations are refusing to recognize the therapeutic activity of the Koch Treatment is illustrated by in the matter of Mary Lou Barnes, a 19 year old Ohio State University student, who in 1949 was reported to have Polio. She was given the Koch Treatment according to the newspaper article titled:

#### CO-ED'S SWIFT RECOVERY MYSTERY EVEN TO DOCTOR

This newspaper article went on to say that the Koch Treatment was black-listed by the American Medical Association and that the drug did not have the approval of the A.M.A. The first polio patient to be treated by Dr. Koch and Dr.

Arnett was Dr. Koch's son, John, in August of 1934. Subsequently, in 1936, Dr. Koch tried to interest the Georgia Warm Springs Foundation, Inc. in his medical research. This foundation had previously been informed about the successful results that had been obtained with the Koch treatment for polio. In response to Dr. Koch's offer to give his treatment to this foundation to treat its polio patients, he received the following March 16, 1936 letter from Mr. Michael Hoke:

Let me thank you for sending me a copy of your reprint "Natural Immunity." I had heard of your investigations from other sources, especially the late Mr. Hardcastle Pennock. **Work of this kind interests me very much, though, of course, it is, strictly speaking, out of my bailiwick entirely.** I like to keep in touch with new things, and as you have further publications I hope you will be so kind as to let me have such references.

Though this Foundation did sponsor research and treatment for polio patients, Mr. Hoke and the administration of the Georgia Warm Springs Foundation showed no interest in Dr. Koch's research. Could this lack of interest have been due to the influence of the A.M.A.? It should be noted that the Board of Trustees of the American Medical Association had become, in 1935, an advisory committee to investigate Polio treatments and was acting in this capacity for the Georgia Warm Springs Foundation at that time of Mr. Hoke's letter..<sup>2</sup>

Subsequently, the local medical societies attempted to have the state medical licenses of the two doctors who had treated Judy McWhorter and Mary Lou Barnes revoked for using the Koch Treatment even though the chemical content of these medications had been established and protected by patent rights. The American Medical Association and the American Cancer Society continued to refuse to acknowledge the therapeutic activity of these medications. The Journal of the A.M.A. had a history of publishing over 20 negative editorials and articles about Dr. Koch and his treatment dating back to February 12, 1921.

In 1934 -1935, for about nine months, Dr. Koch conducted medical research using his medications with Professor Joseph Henri Maisin, Director of Cancer, Louvain University, Louvain, Belgium. The results of this research by Dr. Koch and Dr. Maisin, at Louvain University, was subsequently published in several medical research journals in Europe during the 1930's up to the start of World War II.

One of these research papers was:

The Use of Peroxide of Diformaldehyde and Organic Unsaturated  
Compounds in the Treatment of Anergy and Hyperergy<sup>3</sup>

Origin of this Research

The use of the substances discussed in this article in the

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<sup>2</sup> A History of the American Medical Association 1847 to 1947, Morris Fishbein, M. D., p 422

<sup>3</sup> THE MEDICAL PRESS AND CIRCULAR, September 7, 1938, Vol. CXC VII, NO. 5183

treatment of anergic and hyperergic states is an outcome of extended experimental work with them in other directions.

One of us (1) has made a long study of the action of peroxides on experimental cancers, in an attempt to re-establish, with the aid of these peroxides, those oxidation processes which, as is now generally known, are defective in the malignant cell. He succeeded in obtaining definite prophylactic results against benzpyrene cancer in mice.

Having subsequently tested the action of the peroxide of diformaldehyde in a large number of desperate cases of human cancer, he was struck, from the very beginning of the work, by the remarkable influence of these products on the general health of the patient; euphoria, increase of appetite and weight, diminution of pain.

In addition, he noted coincidentally, in certain patients, a very definite influence on various infective processes as well as on such hyperergic conditions as asthma, eczema, etc., which happened to accompany the malignancy in certain of our treated individuals.

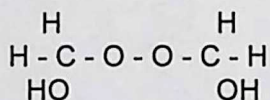
These results were of such a nature that he was prompted to inquire into the action of these products on ordinary cases of anergy and hyperergy, uncomplicated by any malignancy. The early results having been good, he then carried out, with his collaborators, a series of experimental and clinical researches. The products employed were the peroxide of diformaldehyde and certain unsaturated compounds, of which the method of preparation is given below.

#### Nature and Method of Preparation of the Products used

The substances in question are of very simple chemical composition and are easy to prepare.

The first group of products comprises the organic peroxides, of which several have been used with a measure of success. We will describe here one only, the peroxide of diformaldehyde, since it has been particularly studied and is very efficacious.

"The formula of this peroxide is:



It is readily prepared by allowing a saturated solution of hydrogen peroxide in anhydrous ethyl ether to react with a saturated solution of formaldehyde in anhydrous ethyl ether,

The second group of compounds comprises certain highly unsaturated chemical substances, of which we do not know the exact formula, but which may be prepared by the action of phosphoric acid on malonic acid, or by the action of sulphuric acid on ether, or also by the action of sulphuric acid on a solution of acetaldehyde in ether. The first

reaction should theoretically give as a final product, malonic anhydride, having a formula of  $\text{OC}=\text{C}=\text{CO}$ . We have reason to believe that the general formula of those active products would correspond with the structure  $\text{R}=\text{C}=\text{C}=\text{R}$ .

Dr. Maisin also pointed out the importance of using these highly active compounds in very high dilutions. He said:

These researches have shown, as did those with experimental cancer, that only very dilute solutions were efficacious. It is necessary to use the peroxide of diformaldehyde, or the unsaturated compounds in a dilution of the order of  $1 \times 10^{-9}$  at least. Actually, our best results have been obtained with dilutions from  $1 \times 10^{-9}$  to  $1 \times 10^{-18}$ . These very high dilutions ( $1 \times 10^{-18}$ ) still contain several thousand molecules per cc.

After presenting their research findings in this paper, Dr. Maisin went on to discuss their research and present the conclusions they had reached from this research as follows:

#### Discussion

The results obtained are clear, and can be repeated easily by anyone wishing to do so. They are obtained with doses of extremely high dilution, which serves to prove that the active substance can act when exhibited in extremely small traces, as do catalysts, or enzymes. The injections have a lasting action, and do not often have to be repeated, which is an advantage from the patient's point of view. The treatment is absolutely harmless. We have given several thousand injections without the least untoward incident, except that some may have a passing malaise, due to a fall in the blood pressure. It is still too early to be able to say with certainty exactly how these substances act, but we know already with certainty that peroxide of diformaldehyde has a deep and prolonged action on the catalase of the blood.

There is no doubt that we are dealing with new phenomena, which deserve to be carefully investigated, and whose application in therapeutics appears to us to be of interest.

"This work is not finished, but is leading us to believe that these two substances are not alike in their action. Finally, a curious fact which we have proved and one which we would stress, is the lengthy effect produced in a large number of cases, as well as the prophylactic action which we have proved the peroxide of diformaldehyde to have on benzpyrene cancer produced in white mice.

#### Conclusion

I. Peroxide of diformaldehyde and certain unsaturated compounds have a definite physiological action on the organism when only minute traces are injected.

II. Their therapeutic use is indicated since they are very effective

in the treatment of various infections and hyperergic states.

III. The results obtained are better than those obtained with any other shock-producing therapeutic agents, especially from the point of view of the general health of the patient.

Investigation carried out at the Cancer Institute at Louvain. Director, J. Maisin.

"References:

W. Koch and J. Maisin: C.R. Soc. Biol. T. 120, p. 106, 1935;  
J. Maisin and F. Robert: C.R. Soc. Biol. T. 123, p. 156, 1936;  
J. Maisin and Y. Pourbaix: Ileme Congres Internat. De  
Cancerologie Bruxelles. Sept. 1936;  
*J. Maisin, Y. Pourbaix and P. Caeymaex: C.R. Soc. Biol., March 1938"*

On September 8, 1939, while Professor Joseph Henri Maisin was on a trip to the United States just prior to the start of World War II, he wrote the following letter to the Chairman of the Ontario Royal Cancer Commission. In this letter he briefly reviewed his research over the prior five years with some of Dr. Koch's medications. In this letter he stated:

New York, September 8<sup>th</sup>, 1939

To the Honorable Judge Gillanders,  
Chairman Royal Cancer Commission,  
Toronto Canada

Dear Sir:

I wish to contribute to Dr. Arnott's presentation by stating that I have spent the last five years in the study and development of this treatment in allergies, infections and experimental cancer in animals.

The subject is too vast for anything like a report at this time, but I am willing to state that over this short period of five years, I have seen cancer disappear in animals and man with a return of health, as a result of its use, in real cancer proven malignant microscopically. It is, of course, too early to conclude, but sometimes the results have been so striking that we feel fully justified to continue the research in this field.

Very respectfully yours,

(Sgd.) Maisin  
Director, Institute du Cancer,  
Universite de Louvain, Belgium"

In 1936 Professor George R. Harrison at Massachusetts Institute of Technology did some preliminary spectrographic tests on Glyoxylide, one of Dr.

Koch's medications, to make a determination of its chemical structure. In Professor Harrison's report of August 3, 1936, he stated:

A search through the absorption curves given in the International Critical Tables narrowed the possible materials down to a group of a dozen or so. One of the curves most nearly approximating that found was that of glyoxal in water.

To carry the hunt further than this spectrographically would be time-consuming and costly, since it would be necessary to mix duplicating solutions to reproduce the exact curve found. I assume that you do not require this, since it seems to me that the evidence points to the probability that the solution is what Koch says it is, or at least the equivalent.

You will appreciate that while glyoxal in water gives a curve similar to that of the ampoule material, this does not necessarily mean that the latter is this. It merely gives presumptive evidence that similar molecular bonds are present in the two materials. My conclusion is that the spectrographic analysis, as carried out so far, makes it appear very probable that the material is what Koch says it is.

Dr. Koch had identified his Glyoxylide as a polymer of ethylenedione,  $O=C=C=O$ , the most basic dicarbonyl structure known. Scientists have tried for years to isolate  $O=C=C=O$  in its monomer chemical form without success due to its high electron activity.<sup>12</sup> One of the known polymer forms of ethylenedione is Triquinoyl. William J. Hale, Ph.D., Research Consultant of the Dow Chemical Company and The former Director of Organic Chemical Research, in 1949, wrote about this chemical structure and showed the chemical relationship of inositol to rhodizonic acid to triquinoyl in his book *Farmer Victorious, Money, Mart and Mother Earth*.<sup>13</sup>

Dr. Hale wrote the following:

In practice triquinoyl has been found to act almost identically with 'Glyoxylide' ( $O:C:C:O$ ), a compound that Dr. Koch had prepared by dehydration of glyoxylic acid ( $CHO-COOH$ ). In brief, this so-called glyoxylide, which has proved so efficacious in the hands of Dr. Koch against diabetes, arthritis, poliomyelitis and even cancer, undoubtedly polymerizes under many conditions to  $3(O:C:C:O)$  or triquinoyl, in which an oxygen atom is doubly linked to each of the six carbon atoms of the reduced (or saturated) benzene ring carbon structure, and plays a most effective role in the treatment of disease. In the likely dehydrogenation of inositol within the body we can now interpret the phenomenal action of inositol in replacing insulin for diabetics.

<sup>12</sup> Experiments aimed at generating the long-sought-after ethylenedione ( $O=C=C=O$ ) by neutralization-reionization mass spectrometry, Detlev Sulzle, et al, International Journal of Mass Spectrometry and Ion Processes 125 (1993), pp. 75-79.

<sup>13</sup> *Farmer Victorious, Money, Mart and Mother Earth*, Coward-McCann, Inc., N.Y., 1949, Chapter XVIII – Chemotherapy, pp 159-161.

and,

Now the role of these polyketocompounds is definitely oxidative. By their presence a higher level of metabolism is made possible in the system, and, like a passing wave over a golden wheat field, this wave of oxidative influence continues unabated for months upon months-sufficient, indeed, to heal improperly nourished organs and slough off decadent tissues. All of this is in accordance with findings of H. Wieland proving first the hydration of an active carbonyl group in body fluids into  $:C:(OH)_2$  and its subsequent dehydrogenation by enzymes into a peroxide type,  $:C:O:O$ , whereupon nascent oxygen is liberated and the carbonyl group ( $:C:O$ ) regenerated to repeat the process. Just as Pasteur identified the microscopic organisms that led to plant disease, so Koch identifies the chemical agents that are capable of combating microorganisms.

Dr. Albert Szent-Gyorgyi, in his 1963 paper *Cancer Therapy: A Possible New Approach*,<sup>14</sup> identified a substance he called "Retine", a methyl glyoxal derivative, that would inhibited cancer cell growth and "Promine", a substance, which makes cancer cells grow faster. In this paper he suggested that both Retine and Promine were of small molecular weight and of high potency and that they control normal cell division. The actual chemical structure of Retine had not been determined at that time. He also wrote in 1963 that in animal experiments with retine, daily injections of retine produced no observable toxic effect.<sup>15</sup> In 1967, Dr. Szent-Gyorgyi made further reference to glyoxal derivatives as having anti-viral activity.<sup>16</sup> He wrote:

The glyoxal derivatives also have antiviral properties and may be in the center of a hitherto unknown system of equilibria which deserves a thorough study. The low molecular weight of the glyoxal derivatives reported justifies the hope of an early clarification of its structures, as well as its synthesis.

In 1968, Dr. Szent-Gyorgyi wrote about the cancerostatic action of methylglyoxal.<sup>17</sup>

"We found that cancer cells in tissue cultures were more sensitive to methylglyoxal than normal ones were, a finding of possible significance for cancer therapy." and, "Our experiments show that mice inoculated intraperitoneally with sarcoma 180 can be cured by intraperitoneal injections of methylglyoxal."

In his paper *Bioelectronics – Intermolecular electron transfer may play a major role in biological regulation, defense, and cancer*<sup>18</sup> Dr. Szent-Gyorgyi

<sup>14</sup> "Cancer Therapy": A Possible New Approach, Science Vol. 140, p. 1391, June 28 1963.

<sup>15</sup> Preparation of Retine from Human Urine, Science Vol. 142, p. 1571, Dec. 20, 1963.

<sup>16</sup> "Keto-Aldehydes and Cell Division", Glyoxal derivatives may be regulators of cell division and open a new approach to cancer, Science, Vol. 153, Feb. 3, 1967.

<sup>17</sup> "Cancerostatic Action of Methylglyoxal, Science, Vol. 160, p.1140, June 7, 1968.

<sup>18</sup> "Bioelectronics, Intermolecular electron transfer may play a major role in biological regulation, defense, and cancer, Science, Vol. 161, Sept. 6, 1968,

wrote:

The simplest alpha-keto-aldehyde is methylglyoxal (pyruvic aldehyde); this fact seemed most exciting because, as far as we know, all cells contain a very powerful enzymatic system for the conversion of alpha-keto-aldehydes into the corresponding unreactive oxyacids – for converting, for instance, methylglyoxal into lactic acid. This enzymatic system, called the 'glyoxalase,' occupied the attention of several of the most outstanding biochemists in the first half of this century, but the interest later faded out, for no glyoxal derivative could be found on the main metabolic pathways, nor could such a substance be isolated from tissues under normal conditions. And what is the use of an enzyme without a substrate?

Should the inhibitor of growth prove to be a dicarbonyl, like methylglyoxal or a compound thereof, then I had an excuse for not having been able to isolate it, for the isolation of the expected trace amounts of such a very reactive substance would be very difficult indeed.

Dr. Szent-Gyorgyi concludes his paper with this paragraph:

A Tentative New Theory of Cancer: One could ask what would happen if a cell lost its ability to bind its own glyoxalase? Then it would have to go on multiplying senselessly and endlessly, behaving like a cancer cell. As far as we know, the only difference between a normal cell and a cancer cell is the fact that the latter divides when no proliferation is needed. All this leads, tentatively, to a new theory of cancer: a cancer cell is a cell which has lost its ability to bind its own glyoxalase. Whether this theory is right or wrong remains to be demonstrated. It recommends itself by its clarity, its simplicity, and its ability to explain why such a great variety of noxious influences can lead to the same end, cancer. The theory also has the earmark of a good theory: it can be proved or disproved. What may lend it additional value is the fact that it suggests various ways of seeking a therapy for cancer. It is regrettable that, owing to cuts in the budget, this research will have to be discontinued....<sup>19</sup>

In 1972, Dr. Szent-Gyorgyi was interviewed by Jane Kinderlehrer for Prevention Magazine.<sup>20</sup> In her article she wrote about Dr. Szent-Gyorgyi scientific research with the natural non-toxic substance (Retene) he had discovered in the 1960's that had the ability to retard neoplastic cell division and cell growth. He had estimated, at that time, that a \$200,000 grant from the National Cancer Institute, Bethesda, Maryland, would allow him time to come up very close to an actual cure for cancer. This small grant, Dr. Szent-Gyorgyi never was able to get even though the United States government was spending yearly hundreds of millions of dollars on basic cancer research. In this article Dr. Szent-Gyorgyi also made a brief reference to the research of Otto Warburg, Ph.D., M.D., N.L. and

<sup>19</sup> The Federal Government has on many occasions denied research funds to Dr. Szent-Gyorgyi over the years, thus denying him the opportunity to carry on this very important basic medical research to find a "cure" for cancer.

<sup>20</sup> Liver May Hold The Secret of Cancer Prevention, Jane Kinderlehrer, Prevention, pp 124-131, Nov. 1972.

Warburg's theory of anaerobiosis, the ability of animal cells to live without oxygen, as being the prime cause of cancer. Dr. Warburg was of the opinion that anaerobiosis met the demands of Pasteur as the prime cause of cancer.

In his 1973 Dr. Szent-Gyorgyi wrote a complete review of his biological and cancer research over the years.<sup>21</sup> He pointed out the importance of the biological function of the two enzyme systems which involved glyoxalase I and II and of the coenzyme, SH-glutathione and the transformation of glyoxal derivatives into the corresponding hydroxyacids and methylglyoxal into lactic acid.<sup>22</sup> He explains the importance of  $C = O$ , the "carbonyl group", and  $O = C - C = O$ , the "di-carbonyl group", the simplest being glyoxal. He identifies "retine" as the substance that keeps cells at rest, the "off" switch to cell division, and "glyoxalase" as the "on switch" which bring about uncontrolled cell division. It is glyoxalase that changed the reactive, dicarbonyl, glyoxal derivatives into the corresponding inactive hydroxy-acids. He wrote:

If "retine" is glyoxal or a glyoxal derivative; then the enzyme which starts proliferation could be the glyoxalase which transforms the carbonyls into inactive hydroxyacids. As shown by L. Egyud, animal cells do contain glyoxal and methylglyoxal. They contain also glyoxalase so when no proliferation is needed, these two, glyoxalase and the glyoxal derivatives must be kept separated, and damage could induce proliferation by creating disorder and letting them meet. This could explain the biological role of glyoxalase which has been a mystery. (p 554-5)

On page 560, Dr. Szent-Gyorgyi made a reference to Dr. Koch's book *The Survival Factor in Neoplastic and Viral Disease, An Introduction to Carbonyl and Free Radical Therapy*, 1961 and Dr. Koch's emphasizes on the importance of the carbonyls to cancer control.

Albert Szent-Gyorgyi, Ph.D., M.D., N.L., in 1975, wrote the following in his paper *The Search For A Natural Cure For Cancer*. In this paper he has summarized his theories on the basic cause and treatment of cancer. His research has been a very constructive approach to solving the cancer problem and the bases for establishing an effective form of treatment for cancer.

There is a great need for a drug which cures or prevents cancer without harming the patient. Such an action can be expected only from a natural substance. I have to explain what I mean by "natural".

The cell is an exceedingly complicated and subtle machinery in which all functions are carefully regulated. A normal cell divides only when division is needed. A cancer cell divides also when no division is needed. The regulators are out of order. All efforts to show the difference

<sup>21</sup> *Bioelectronics and Cancer*, Bioenergetics, 4, pp 533-562, 1973.

<sup>22</sup> Dr. Koch, in his early research, had observed that the urine of the animals without parathyroid glands carried large amounts of lactic acid. see page 2,.

in the treatment of various infections and hyperergic states.  
III. The results obtained are better than those obtained with any other shock-producing therapeutic agents, especially from the point