VITAMIN B17

Monographic Summary

In spite of the great advances in the diagnosis and treatment of malignant tumors, cancer continues to be one of the principal causes of death in the highly industrialized countries. It is calculated that one out of four persons will eventually die from some form of cancer.

Since it is true that surgery and radiotherapy are capable of curing some patients with localized tumors and that chemotherapy has achieved cures in some 10 types of malignant tumors, the general mortality rate from cancer has not improved substantially in the last 25 years and nearly 60% of the patients upon being diagnosed, find that their disease is so widespread that the chemotherapy drugs currently being used, due to their high toxicity, cannot be given in dosages sufficient to destroy the large tumoral mass present in patients. Many cannot be exposed to chemotherapy, surgery or radiotherapy because of the undesirable effects. There are several types of tumors for which there is no effective treatment yet known. All this justifies, and even makes imperative the search for new substances with antitumoral effect and ideally, with little or no toxicity in therapeutic dosages.

In the last 10 years several vegetable and hormonal substances have been discovered with such characteristics and, therefore, many patients who formerly could not be benefited or alleviated medicinally may now be exposed to useful, antineoplastic treatments, This treatments are based on the anti-tumoral action of a vegetable agent that was known empirically for many years, but in the last 20 years has been scientifically proven, primarily through clinical studies. This antitumoral agent is VITAMIN B17 commonly known as VITAMIN B17 and/or Laetrile, VITAMIN B17 is a natural substance that can be found in a variety of species in the vegetable kingdom.

The greatest concentration is found in the seeds of the rosaceous fruits, such as apricot pits and other bitter nuts.

There are many seeds, cereals and vegetables that contain minimal quantities of **VITAMIN B17** and form part of our daily diet.

Various documents from the oldest civilizations such as Egypt at the time of the Pharaohs and from anos 2,500 years before Christ mention the therapeutic use of derivatives of bitter almonds. Egyptian papyri from 5,000 years ago mention the use of "aqua amigdalorum" for the treatment of some tumors of the skin. The Greeks and Romans also attributed therapeutic properties to that extract in low dosages

But the systematized study of VITAMIN B17 really did not begin until the first half of the past century, when the

Exhibit A

chemist Boher discovered in 1802 that during the distillation of the water from bitter almonds, hydrocyanic acid was released. Soon many researchers became interested in analyzing this extract and so Robiquet and Boutron isolated, for the first time, a white crystalline substance which they called VITAMIN B17 (from amygdala = almond).

Leiberg and Veholler in 1937 isolated an enzymatic compound from sweet almonds, also present in the bitter ones, which they called emulsin. They later reported that emulsin broke down into three compounds: glucose, hydrocyanic acid and benzaldehyde.

Other studies from that time, performed by several authors can summarize the declaration made by Otto Jacobsen in his book; Die Glucoside in 1887: VITAMIN B17 is not toxic, and gives 39 references from studies made within the 20 years prior to his publication.

Physical and Chemical Properties

Although the identification of the majority of the physical and chemical characteristics of VITAMIN B17 have been known since the beginning of our century, it was not until the second half of this century that Ernest T. Krebs Jr. (biochemist) and Ernest T. Krebs Sr. (doctor) isolated VITAMIN B17 with a purity of practically 100%, enabling all the physical and chemical characteristics peculiar to VITAMIN B17 to be ascertained. Listed below are the majority of these:

VITAMIN B17 is a white, crystalline, inodorous powder with an intensely bitter taste, slightly soluble in cold water, alcohol and acetone, very soluble in hot water, insoluble in ether.

It has a pH of 7 (neutral) in a saturated, aqueous solution its point of fusion is between 210 ' C and 218 ' C and its loss upon drying is less than 5 %.

Its optical rotation is levogyrous or negative: between -37' and -42'; it has a maximum absorbance of ultraviolet light of 262 h m and a minimum of 250 h m.

Its stability is complete in crystalline form as well as in saturated, aqueous solution in which the loss is less than 2.5% after five years.

Chemically, it is a cyanogenic diglucoside, with a molecular weight of 457.42 g, a chemical name of D-Mandelonitrile-b -glucoside-6- b -D glucoside.

When it's mixed with concentrated, hydrochloric acid, it gives positive reactions characteristic of benzaldehyde, of the reducing sugars and the hydrocyanic acid.

Clinical experience with the use of Vitamin B17

Like many other substances VITAMIN B17 was initially employed empirically on patients with malignant tumors. Inozemsov, a Russian doctor, used it with this purpose at the beginning of our century. Dr. Ernest T. Krebs Sr.and their collaborators have published their experiences since

the 1950's.

All agree that it is a characteristically harmless substance when administered intravenously under medical supervision and that orally, therapeutic dosages can be tolerated. On the other hand, they all report definite palliative and antitumoral effect even on patients with cancer in terminal stages. Phase I studies were designated to determine the minimum toxic dosage in humans. Some 420 patients with cancer in advanced stages and 90 healthy volunteers were exposed to VITAMIN B17 in intravenous dosages of up to 21g or 2g orally, per day, tolerated perfectly without evidence of toxicity, acute or chronic (six month study). The palliative effect was apparent in those patients who were not able to tolerate any kind of conventional treatment.

The Phase II studies were designed to demonstrate the antitumoral effect of VITAMIN B17. The files of 1200 patients with advanced malignant neoplasms exposed to VITAMIN B17 in varying dosages were reviewed. Intravenously and orally, VITAMIN B17 demonstrated to have antitumor effect. Complete remissions, partial remissions and prolonged stabilization (objective responses) were seen in almost 33% of the patients, who were no longer candidates for conventional treatment in more than 70% of the cases.

VITAMIN B17 : New dimension in cancer prevention

The holistic or metabolically oriented physician recognizes the natural intrinsic immune system designed into the human body and the extrinsic backup system provided in our natural food supply. As exhibited in all chronic metabolic diseases (scurvy, pellagra, etc.) the final resolution has always been found to be nutritional, and the prevention always the same as the cure. Dr. Ernest T. Krebs suggest: "...For those who do not have cancer, a general diet containing food rich in nitriloside content should be adequate

Obviously some of the food mentioned by Dr. Krebs ane not readily available to the average city dweller, especially considering that, in westernized society nitrilosides (VITAMIN B17 are not generally contained in other foods to supplement it.

As a substitute many people simply have adopted the habit of eating six to twelve apricot seeds each day (which content is approximately 125 a 250 mg of VITAMIN B17). But many people still dislike the bitter taste of these seeds.

The amount of VITAMIN B17 needed by the body is an unknown quantity, it will vary depending on the person: his age, sex, condition of pancreas, diet, weight, and hereditary factors.

Studies made by Dr. Harold Manner and latter by the McNaughton Foundation, concluded that 100 mg to 250 mg per day will be the ordinarily recommended amount for complete assurance of an actively supported natural immunity from the deadly symptoms of cancer. Therapeutic efficacy of VITAMIN B17 is considered by

many authorities to be highest when the natural metabolic pathway of oral ingestion is followed. Tablets are therefore, the delivery system recommended by the majority of physicians. Fortunately for this purpose Cyto Pharma de Mexico S.A. offers VITAMIN B17 in 100 mg Tablets, naturally obtained from apricot seeds, meeting the physiological and chemical properties of the VITAMIN B17 listed on the Merck Index.

Conclusion

With all that which has been previously exposed. we can conclude that VITAMIN B17 has an antitumoral effect, even in those patients in a poor condition and/or with extensively disseminated disease. VITAMIN B17 as an antineoplastic agent is no longer a dream to be proven, but rather a demonstrated reality with scientific evidence confirmed each time that it is prescribed under medical vigilance. VITAMIN B17 appears to be not only a possibility for the cure of cancer but also and most importantly opens a new dimension for its prevention.

HIDRAZINE SULPHATE

Hydrazine sulphate is a chemical that works against cancer by blocking a liver enzyme in the body. In blocking the enzyme, the tumor is deprived of the energy it needs to grow. It is not claimed to be a cure, but ther esult is the tumor shrinks. It also has helped to decrease pain and reverse the weight loss that so often accompanies cancer.

Hydrazine sulphate is an anti-cachexia drug which acts to reverse the metabolic processes of debilitation and weight loss in cancer and secondarily acts to stabilize or regress tumors. Hydrazine sulphate is a monoamine oxidase (MAO) inhibitor and is incompatible with tranquilizers, barbiturates, alcohol and other central nervous system depressants. Foods high in tyramine, such as aged cheeses and fermented products, are also incompatible with MAO inhibitors. The use of tranquilizers, barbiturates and/or alcoholic beverages with hydrazine sulphate destroys the efficacy of this drug and increases patient morbidity.

There is an abundance of published, positive, peer reviewed studies on hydrazine sulphate in the medical literature. (Abstracts of some of these published studies are given on the following pages.) These data emanate from major cancer centers both from the United States (randomized, double-blind, placebo-controlled studies and single-arm studies) and Russia (large-scale, multicentric Phase II-equivalent studies). These data indicate the therapeutic action of hydrazine sulphate to extend to all types of tumors.

Hydrazine sulphate has been demonstrated to produce only few and transient side effects. There have been no instances of bone-marrow, heart, lung, kidney or immune system toxicity, or death, reported. Hydrazine sulphate has never been demonstrated to be carcinogenic in humans.

CAS Nos. 302-01-2 and 10034-93-2

First Listed in the Third Annual Report on Carcinogens 3D Structure

Properties

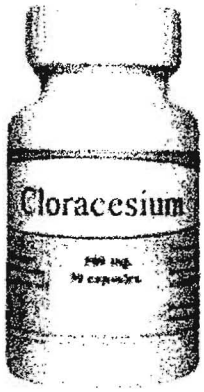
Hydrazine is a colorless, oily, fuming liquid with a fishy odor. It is miscible with water and ethanol and slightly miscible with hydrocarbons and halogenated hydrocarbons

Exhibit B

Hydrazine sulphate is a colorless crystal. It is soluble in water and insoluble in alcohol. When heated to decomposition, it emits toxic fumes of sulfur oxides (SOx) and nitrogen oxides (NOx). Hydrazine sulphate is available in two grades of < 98% and 99% purity with heavy metal and chloride impurities.

Exposure

The primary routes of potential human exposure to hydrazine are ingestion, inhalation, and dermal contact. The National Occupational Hazard Survey conducted by NIOSH from 1972 to 1974 estimated that about 11,000 workers were possibly exposed to hydrazine in the workplace (NIOSH, 1976). In 1978, NIOSH estimated that 9,000 workers in the United States may have been potentially exposed to hydrazine and that over 90,000 may have been exposed to various hydrazine salts (NIOSHa, 1978). The environmental fate of hydrazine and its derivatives is largely unknown, but all the simple hydrazine derivatives are polar, nonvolatile, and soluble in water.



Cloracesium
(Cesium Chloride)

The high pH therapy for cancer tests on mice and humans.

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The high Ph thepary for cancer was arrived at from an extensive series of physical experiments. These involved the isotope effect across membranes of many types, normal plant and animal, embyonic, cancer and synthetic. It also involved mass spectographic analyses of membranes and cells, as well as fluorescence and phosphorescence decay studies of many types of of cells and parts thereof. It is the thesis of this paper that the results obtained throw a direct light upon the mechanism of carcinogenesis, and also indicate a therapy. Test on both mice and humans substantiate this theoretical approach.

Background

The isotope effect throws a very direct light on the mechanism of carcinogenesis. In ths study it was shown that the ratio in ocean water down to 6000 ft was 14,20000 [9-11]. In normal matured cells, both plant and animal, the ratio varied from 14.25 to 14.21. Embryonic and cancer cells all gave ratio of 14.35 In the case of all synthetic cells across which there was a potential gradient, the ratio was 14.35. From the4se values it will be seen that the ratio in normal living cells indicate that as many isotopes leave the cell as enter.

In the case of potassium for embryonic and cancer cells as well as synthetic type cells with all types of membranes even including liquid mercury films the observed isotope ratio was giben by equation 1.

Where n refers to the normal ratio, o to the observed ratio, and m is the associated mass for the ioms.

All cations in solution are associated. The attached n ass for cs* is 3 molecules of water, for Rb* it is 5 molecules, for K+ is 7 molecules. For cations below potassium in the Electromotive Series all ions are highly associated. This is to be expected from their position in the hoffmeister Series. In the case of Ca++ the association is 30 molecules, while Na+ is 16. Equation (1) holds for all cations tested from H+ to U++. The value of m however will vary when polar molecules are present in the solution. For example, k+ can also attach glucose. In contrast,

Exhibit C

Ca++ can attach a wide variety of molecules; it is this cation that transports peroxides into the cell, as well as metabolic products out of the cell.

The results given in qeuation (1) are most significant in that they show that transport is dependent entirely upon the frequency with which the ions strike the membrane surface. It is not a matter of capillary action, but one on which the ion and its associated mass pass directly through the bonding space between molecules which comprise the membrane, That the associated molecules are not lost in this transport is due to the fact that the attraction between the molecuiles and the ion is far greater that their attraction by the material of the membrane.

In the case of potassium an exact similarity exists between embryonic and cancer ceils. The isotope ratio indicates that the K+ ions are taken up by the most efficient process possible. The same held true for Cs+ and Rb+. In contrast to the above, a vast difference exists for cations below potassium in the EMS. In the case of embyonic cells all cations tested obeyed equation (1). In the case of cancer cells cations below potassium were taken up sparingly, if at all. For example the amount of calcium in cancer cells is only about one percent of that in normal cells [18].

The above isotope effect for potassium which transports glucose into the cell, and for calcium which transports oxygen are most significant with respect to cancer. They mean that glucose can readily enter cancer ecils but that oxygen cannot enter. This accounts for the anaerobic state of cancer cells pointed out by Warbug as early as 1925 [26].

The mechanism responsible for the similarity in the isopote effect for potassium and rubidium in cancer and embyonic cells and for their marked difference in case of calcium was investigated in some detail using mass spectrographic analyses, and also fluorescence and phosphorescence decay patterns.

The phosphorescence decay patterns were found to be peculiar to and specific for all cell types or parts thereof [12-15]. It should be mentioned that the decay spectra is due entirely to the light emitted from the energized double bonds. All double bonds are capable of being raised to the energized state. While the fluorescence spectra and the phosphorescence decay patterns are both specific for each double bond they can be influenced by adjacent strong polar radicals. Again, both can be completely depressed by molecules absorbed over the surface; thus morphine, as well as attached polycyclic type molecules, will completely depress the excitation of the P=0 radicals which characterize all cell membrane surfaces.

It was observed that the membranes tested gave a

phosphorescence decay pattern due almos entirely to the P=0 radicals which are composed of phospholipids. These radicals are specifically oriented over each type of membrane. This is most significant from the point of view of membrane action, since the P=0 radicals are moderately strong electron donors in the ground state and strong to powerful donors in the energized state. This is due to the fact that the ionization potentials, 1st to 5th, are appreciably higher for the 0 than the P atom. This means that the 4 bonding electron orbitals will be displaced nearer the 0 atom thus surrounding this atom with a pronounced negative field. The P atom is thus positive in nature.

The above results are most important with respect to membrane action. They show that the strong electron acceptors Cs+, Rb+ and k+ can be attracted into the membrane so that they will enter the negative potential gradient which exists across all living membranes. In contrast to these cations, the highly associated cations farther down in the EMS are not sufficiently strong electron acceptors to be drawn into this gradient except when the P=0 radicals are in the energized state. This means that K+ cations which transport glucose into the cell can readily enter cancer cells, but the Ca+ ions which transport oxygen into the cell cannot enter. In the normal cell the glucose, upon entering the cell, reacts with the oxygen in the cell and is burned to carbon dioxide and water with the liberation of heat. This heat in turn is absorbed on the membrane surface and raises the P=0 radicals to an energized state which permits them to attach more Ca++ ions. Thus it will be seen that the amount of oxygen entering the cell is determined by oxidation within the cell, primarily that of glucose. This action is responsible for the pH control mechanism of the cell which maintains a value near 7.35.

The reactivity of the double bond has been studied in some detail using both light absorption and electron impact. It was found that energy states of the order of those produced by metabolic processes were not reactive. In contrast, high energy states such as those that are induced by radioactivity, are very reactive.. Intermediate energy states in the ultra violet range were not reactive. Intermediate energy states in the ultra violet range were not reactive by electron impact, but slightly with light quanta. Here however the reactivity increased with a high power of the energy intensity per unit area [16]. This suggests that the reactivity may be due to the multiple absorption of light wuanta, thus raising the energy of the bond to the sum of the quanta absorbed.

The Mechanism of Carcinogenesis

The experimental information presented in the previous section involving the isotope effect, mass spectrographic analyses, and fluorescence and phosphorescence decay,

combined with the pH data supplied by Von Ardenne [23-25], makes it possible to
define the mechanism involved in carchinogenesis. This mechanism is very different from the accepted one of carcinogens entering the cell and becoming attached to the DNA. This mechanism will not explain any of the experimental data outlined briefly herein.

The proposed mechanism can be outlined in four steps.

Step 1:

The attachment of carcinogenic type molecules to the membrane surface. This involves two factors: (a) the presence of carcinogenic type molecules primarily of the polycyclic type, and (b) an energized state of the membrane, which may result from prolonged irritation. When these molecules are attached to the membrane glucose can still enter the cell, but oxygen cannot. The cell thus becomes anaerobic.

Step 2:

In the absence of oxygen, the glucose undergoes fermentation to lactic acid. The cell pH then drops to 7 and finally down to 6.5

Step 3:

In the acid medum the DNA loses its positive and negative radicals sequence. In addition, the amino acids entering the cell are changed. As a consequence, the RNA is changed and the cell completely loses its control mechanism. Chromosomal aberrations
may occur.

Step 4:

In the acid medum the various cell enzymes aer completely changed. Von Ardenne has shown that lysosomal enzymes are changed into very toxic compounds. These toxins kill the cells in the main body of the tumor mass. A tumor therefore consists of a thin layer of rapidly growing cells surrounding the dead mass [3]. The acid toxins leak out from the tumor mass and poison the host. They thus give rise to the pains generally associated with cancer. They can also act as carcinogens.

High and Low pH Theraphys.

Only two therapies will be mentioned here. Both are apparently effective. These are the low pH therapy devised by Von Adrenne et al. [23-25] and the high pH therapy developed by the writer.

The Low pH Therapy.

In this therapy devised by Bon Ardenne, glucose is injected into the blood stream. As a consequence, the cancer cell pH will drop eventually to the 5.5 range. The patient is then placed in a furnace heated to 104F for a matter of hr[23-25]. The older the patient, the fewer the number of hours. The patient is allowed to breath cold air. Diathermy is also applied over the tumor area
which, in the absence of a blood supply, will cause the temperature of the mass to rise to something over 106F. At these high temperatures and in the acid medium, the life of cancer cells is very short. The only drawback to the therapy is that a case of severe toxemia may result from the out-leakage of the acid toxins within the tumor masses [23-25].

The High pH Therapy.

The ready uptake of cesium and rubidium by the cancer cells lead the writer to the high pH therapy. This consists of feeding the patient close to 6 g. of CsCI or RbCI per day in conjunction with the administration of ascorbic and retionic acids, vitamins C and A, which being weak acids, upon absorption by the tumor cells will enhance the negative potential gradient across the
membrane, and also zinc and selenium salts which, when absorbed on the membrane surface, will act as broad and moderately strong electron donors. Both types of compounds have been shown in mice to drastically enhance the pickup for cesium and
rubidium ions.

The toxic dose for CsCL is 135 g. The administration of 6 g. per day therefore has no toxic effects. It is sufficient however to give rise to the pH in the cancer cells, bringing them up in a few days to the 8 or above where the life of the cell is short. In addition, the presence of Cs and Rb salts in the body fluids neutralizes the acid toxin leaking out of the tumor mass and renders
them nontoxic.

Test of the high pH therapy on mice and humans

The therapy has been tested and the results will be discussed briefly below.

Tests on mice:

The high pH therapy was first tested at American university in Washington, DC using mice. In these tests. 2 mm cubes of mammary tumors were implanted in the abdomens of mice and allowed to grow for 8 days. The mice were then divided into two groups. Both groups were continued on mouse chow, but the test group was given 1.11 g of rubidium carbonate by mouth
per day in aqueous solution. After 13 more days the controls were starting to die so all mice were sacrificed and the tumors removed and weighed. The tumors in the test animals weighed only one eleventh of those in the controls. In addition, the test animals were showing none

of the adverse effects of having cancer [3].

Results similar to those mentioned above were obtained at platteville, WI using CsCL. More recently, platteville has studied intraperitoneal injection of cesium carbonate for mice with abdominal tumor implants with 97% curative effect.

Test using intraperitoneal injections of CsCI were carried out by Messiha et al. [21]. The results were most successful and showed a drastic shrinkage in the tumor masses.

Tests on Man:

Many tests on humans have been carried out by H. Nieper in Hannover, Germany and by H. Sartori in Washington, DC as well as by a number of other physicians. On the whole, the results have been very satisfactory. It has been observed that all pains
associated with cancer disappear within 12 to 24 hr. except ina very few cases where there was a morphine withdrawal problem that required a few more hours. In these test 2 g doses of CsCI were administrated three times per day after eating. In most cases 5 to 10 g. of vitamin C and 100,000 units of vitamin A, along with 50 to 100 mg. Of zinc, were also administered. Both
nieper and Sartori were also administering nitrilosides in the form of laetrile, there are good reasons to believe that the laetrile may be more effective than the vitamins in enhancing the pickup of cesium by the cells.

In addition to the loss of pains, the physical results are a rapid shrinkage of the tumor masses. The material comprising the tumors is secreted as uric acid in the urine; the uric acid content of the urine increases many fold. About 50% of the patients were pronounced terminal, and were not able to work. Of these, a majority have gone back to work.

Two side effects have been observed in some of the patients. These are first nausea, and the second diarrhea. Both depend upon the general condition of the digestive tract. Nieper feels that nausea can be prevented by administering the cesium in a
solution of sorbitol. The diarrhea may, to some extent, be affected by the vitamin C.

Only one case history will be presented here. A woman with 2 hard tumor masses 8 to 10 cm in diameter, one on her thyroid and one on her chest, was given 3 to 6 months to live. She had been subjected to chemotherapy, but was discontinued because it
weakened her. She was taking laetrile on her own. She was given a 50 g bottle of CsCI and was told to take 4 g per day. She reported her case a year later. Being very frightened she took the entire 50 g. in one week. At the end of that time the tumor masses were very soft, so he obtained another 50g of CsCL and took it in another week.

By the end of that time she could not find the tumors, and two years later there was no signs of their return.

Low Incidence Cancer Areas

There are a number of areas where the incidences of cancer are very low. Unfortunately, the food composition in these areas has never been analyzed. At the 1978 Stockholm Conference on Food and Cancer it was concluded that there is definitely a connection between the two, but since the relationship was not understood, no conclusions could be drawn [22]. The food intake has been studied by the author as far as possible from the high pH point of view. The results found will be discussed for a number of low incidence areas.

The Hopi Indians of Arizona:

The incidence of cancer among the Hopi indian is 1 in 1000 as compared to 1 In 4 for the USA as a whole. Fortunately their food has been analyzed from the stand point of nutritional values [17]. In this study it was shown that the Hopi food runs higher in all the essential minerals than conventional foods. It is very high in potassium and exceptionally high in rubidisium. Since the soil is volcanic it must also be very rich in cesium. These indian live primarily on desert grown calico corn products. Instead of using baking soda they use the ash of chamisa leaves, a desert grown plant. The analyses of this ash showed it to be very rich in rubidium. The indian also eat many fruits, especially apricots, per day. They always eat the kernels. The results indicate clearly that the Hopi food meets the requirements for the High pH therapy.

The Pueblo Indians of Arizona

Some 20 years ago the incidence of cancer among Pueblo Indians was the same as that for the Hopi Indians, since their food was essentially the same, But unlike the Hopi, these Indians have accrued certain items from outside their environment, hence supermarkets were installed in the area. Today the incidence of cancer among the Pueblos is 1 in 4, the same as the U.S. it is reported that there is a regular epidemic of cancer among them. It must be emphasized here that the high incidence of cancer is not due to what is in the supermarket foods, but rather to what is not in it. It is essentially lacking rubidium and cesium and low in potassium.

The Hunza of North Pakistan

Cancer is essentially unknown among the Hunza, but unfortunately their food has never been analyzed. Talks with Hunza themselves and with Hindu professors who have spent some time in the area, have thrown sufficient

light upon the food intake to show that it meets the requirements of the High pH therapy. They are essentially vegetarians, and are great fruit eaters,
eating ordinarily 40 apricots per day; they always eat the kernels, either directly or as a meal. They drink at least 4 liters of mineral spring waters which abound in the area. Fortunately this water has been analyzed and found to be very rich in cesium.
Since the soil is volcanic in nature. It must be concluded that it will be rich in Cs and Rb, as well as K.

Central and South America

The Indians who live in Central America and on the highland of Peru and Equator have very low incidences of cancer. The soil in these areas is volcanic. Fruit from the areas has been obtained and analyzed for bubidium and cesium and found to run very high in both elements. Cases have been reliably reported where people with advance unoperable cancer have gone to live with these Indians, and found that all tumor masses disappear within a very few months. Clearly the food there meets the high pH requirements.

In conclusion, the High pH therapy, as has been pointed out, was arrived at from physical experiments carried out on cancer and normal cells. It has been tested and found effective on cancers in both mice and humans, There can be no question that Cs and Rb salts, when present in the adjacent fluids the pH of cancer cells, will rise to the point where the life of the cell is short, and
that they will also neutralize the acid toxins formed in the tumor mass and render them nontoxic.

Cesium Dosage and Side Effects

Several problems have arisen in the therapy which require further study. One of these is to determine the minimal dosage of CsCL that will kill cancer cells. Would cesium carbonate be better? Related to this are the effectiveness of the intravenous injections, and in certain cases, intraperitoneal injections. Both have been found to be effective in mice, but they have not yet been tested on humans.

The minimal dosage for curative action has not been determined. It has been observed by several physicians that the administration of .5 g per day of CsCL will actually enhance the rate of tumor growth. This is to be expected, since this low amount is sufficient only to raise the cell pH into the high mitosis range. The data so far reveal that any quantity of 3.0 g or above will be effective.

A side effect which occurs in some cases, especially those who have had stomach ulcers, is nausea. This is far smaller for 3.0 g per day than for 6 to 10 g. The nausea can be minimized by administering cesium salt on a sorbitol solution as mentioned earlier. Further studies are

necessary.

A limited number of patients have experienced diarrhea. Since cesium is a nerve stimulant [19], this can be expected. The effect is enhanced by taking large doses of vitamin C, but it apparently is lowered by laetrile.

A further study is being made to determine the amount of cesium, rubidium or possible potassium in the diet that is sufficient to prevent cancer. Some data is available on the food composition in areas of the world where cancer is very low, but it is difficult to get a quantitives, since the amount eaten varies greatly between individuals.

The effectiveness of potassium salts is yet to be determined. Tests to date have not been made on leukemia patients.

Cesium Biological Uses

In addition to the cancer therapy outlined in this paper, a [19] U.S. patent has been issued on the use of cesium chloride as a nerve stimulant, Cesium salts are very effective in regulating heart arrhytmia. In areas of the world where cesium in the food intake is high, it has been noted that longevity of well over 100 years is not at all uncommon. Based on experimental date available [21] Cs salts may be useful in the treatment of manic depressives.

Cesium chloride and Cancer, studies in Humans, the first 50 cases, H.E. Sartori, M.D., Washington , D.C.

Studies in humans performed at life Science universal (LSU) Clinics in Rockville, Maryland and Washington, D.C. over the past three years have largely confirmed biophysical concepts and data from animal experiments with A. Keith Brewer's high pH therapy for cancer using cesium chloride. There was a prompt reduction in the tumor cell mass in all patients treated, often evident within only a few days after the treatment started. One of the most striking effects was the disappearance of any cancer-related pain in all patients within on to three days.

From April 1981 to February 1984, 50 cancer patients have been treated, all of them terminal with generalized metastatic disease. 47 of the 50 patients had received maximum surgery, radiation, and chemotherapy before our metabolic regime was
started. 3 patients were comatose. 14 patients were moribund from previous treatment attempts and their cancer complications.

Each patient showed a reduction in the tumor mass even after only forty-eight hours. Of the 17 comatose and moribund patients, 12 died from complications of their cancers but especially the consequences of chemotherapy and radiation. One comatose breast cancer patient

recovered so rapidly that after five days she attempted to leave her bed. When stepping out of her bed, she feel and broke a cervical vertebra which led to her demise within another eight days (a metastasis had destroyed her femur and caused her fall).

Of a series of the first 50 patients with a variety of terminal cancers, as of July 1, 1984 the survival time of the 25 survivors, all of them expected to die not later than 2 weeks to 3 months after the treatment was started, is it at least 8 months and up to 3 years and 3 months.