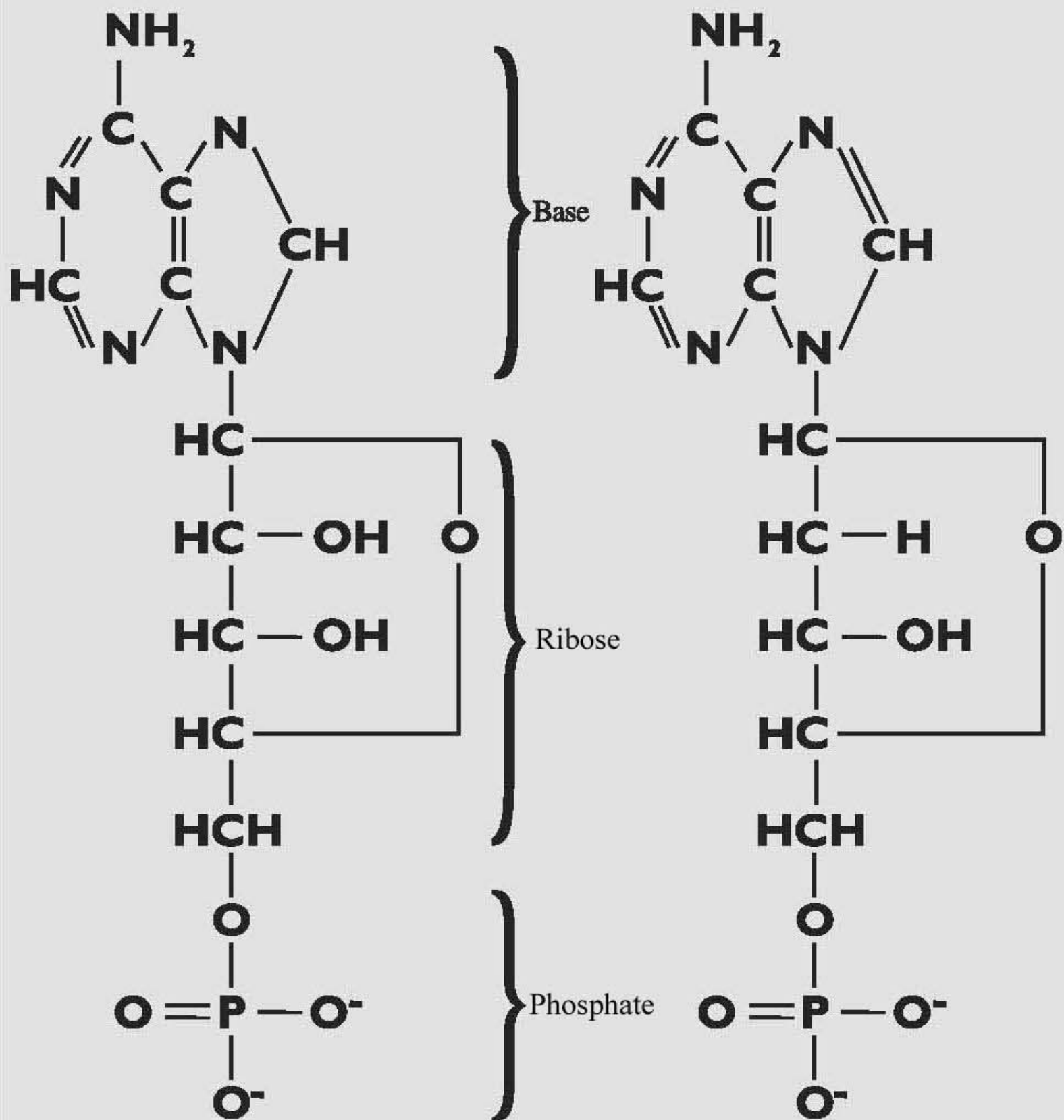


Studies And Reaserches on Potassium Ascorbate and Ribose



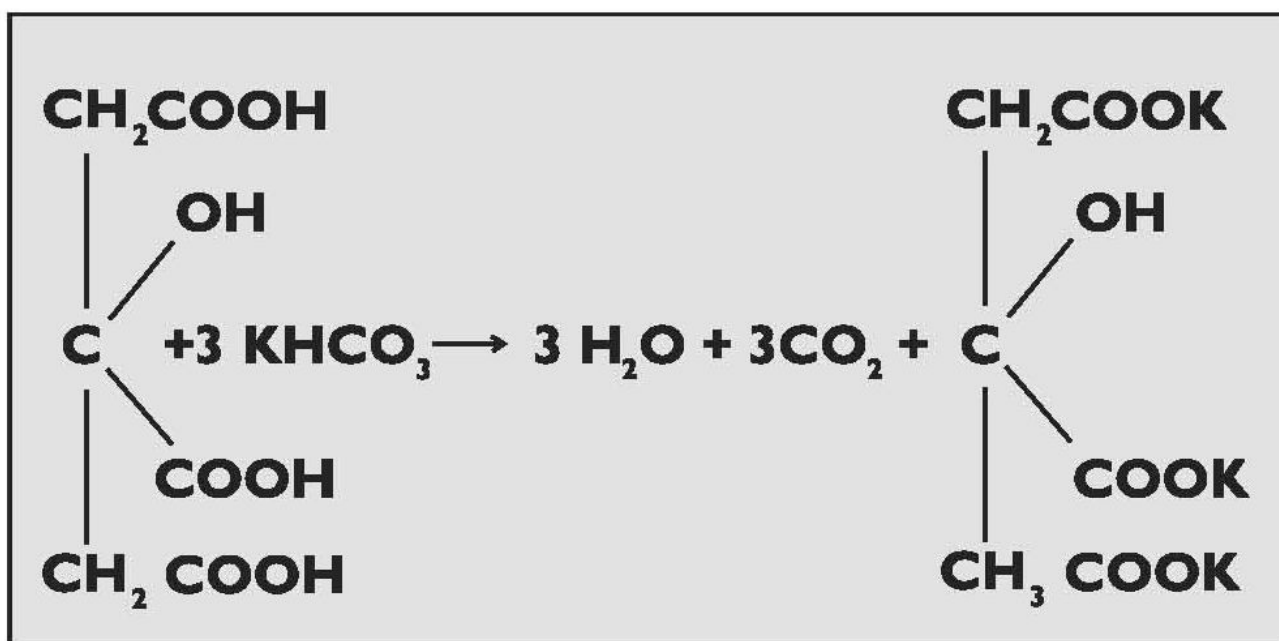
Doc. Gianfranco Valse' Pantellini

My research had a real casual start. A patient affected with an inoperable stomach cancer was reported to have achieved amazing benefits drinking sweet lemon juice to which he mistakenly added Potassium bicarbonate (KHCO_3) in lieu of the common Sodium bicarbonate (NaHCO_3). I was deeply surprised and I kept wondering how a limon juice could produce such positive benefits.

Science has been long since searching for a substance having an efficacious role in cancer treatment. Up to now all efforts directed to discovering such a substance have proved to be useless.

I started a careful investigation on the matter and I began to salify with Potassium bicarbonate each component of a lemon juice.

The first component is the citric acid which I succeeded in salifying it with Potassium bicarbonate, then in crystallizing it in high vacuum after eliminating any impurity.



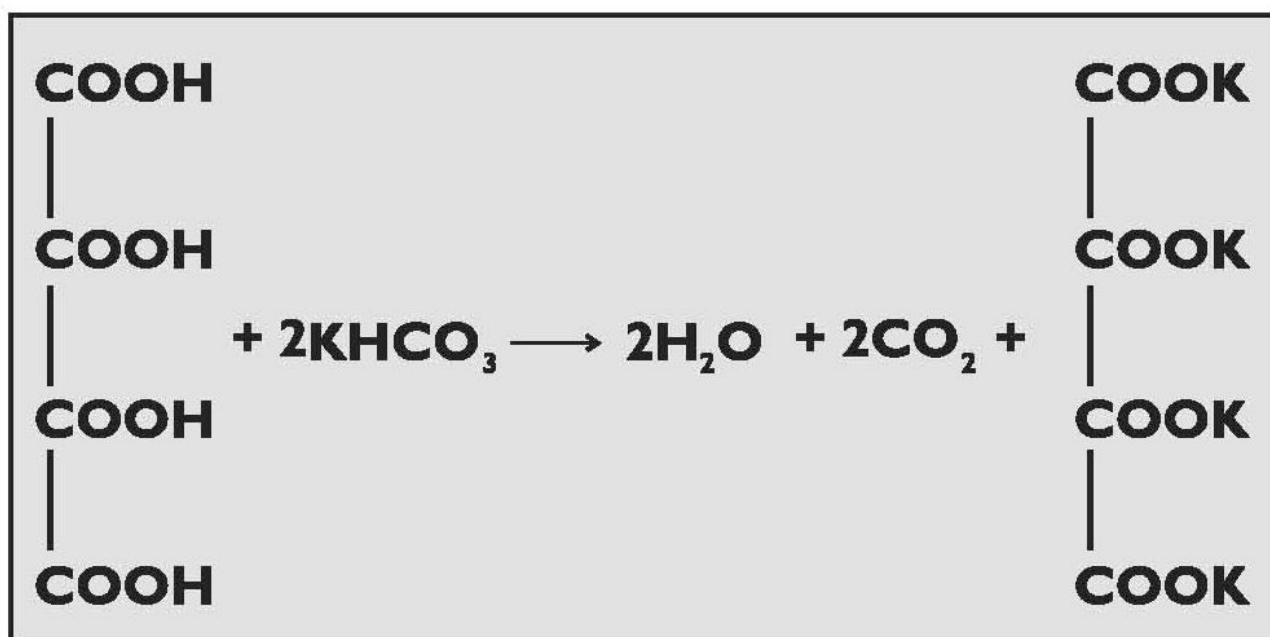
After ascertaining the chemical identity of the product thus obtained in comparison with the chemically pure product on sale I started the first experiment.

With the help of a few medical doctors I grouped four cancer patients which were almost doomed to die. They willingly accepted to take for oral administration 1 gram a day of Potassium citrate, subdivided in two 0,50 g doses. They had to take each dose dissolved in water (25-30 cc.) at least 45 minutes before each meal. During this therapy the usual administration of general tonic medicines as well as analgesic and analeptic drugs was continued.

After a twenty day-treatment no one of the patients involved had any improvement, but rather some diarrhea and an increased diuresis. Tests and checks appeared to be within normal levels with respect to the course of the disease.

The second component contained in a lemon juice is the tartaric acid.

I submitted even this component to salification and compared it to the chemically pure product on sale.



The same patients were administered with a 0,90 g dose of Potassium tartrate subdivided in two 0,45 g doses dissolved in water (25-30 cc.) to be taken twice a day 45 minutes before the main meals.

After a twenty day-treatment no improvement nor any change to the course of the disease were reported.

Two more components remained to be salified in the lemon juice, i.e. ascorbic acid and vitamin P (hesperidin + erythrodictiol), the latter being present in very small traces.

As said components were rather difficult to be extracted and crystallized from the lemon juice, I salified the ascorbic acid with commercial pure substance furnished by chemical manufacturing companies such as Roche, BDH, Merck (Potassium bicarbonate being furnished by Merck).

SALIFICATION OF ASCORBIC ACID

Ascorbic acid is easily salified both with alkaline Bicarbonates dissolved in cold distilled water and with warm earthy-alkaline Carbonates at a temperature of 45°/50° C and working out of CO₂.

By cold evaporation under high vacuum crystallized salts are obtained (Ascorbates).

As concerns Vitamin P (Hesperidin and Erythrodictiol) I did not deem necessary to carry out experiments in consideration of their very small traces.

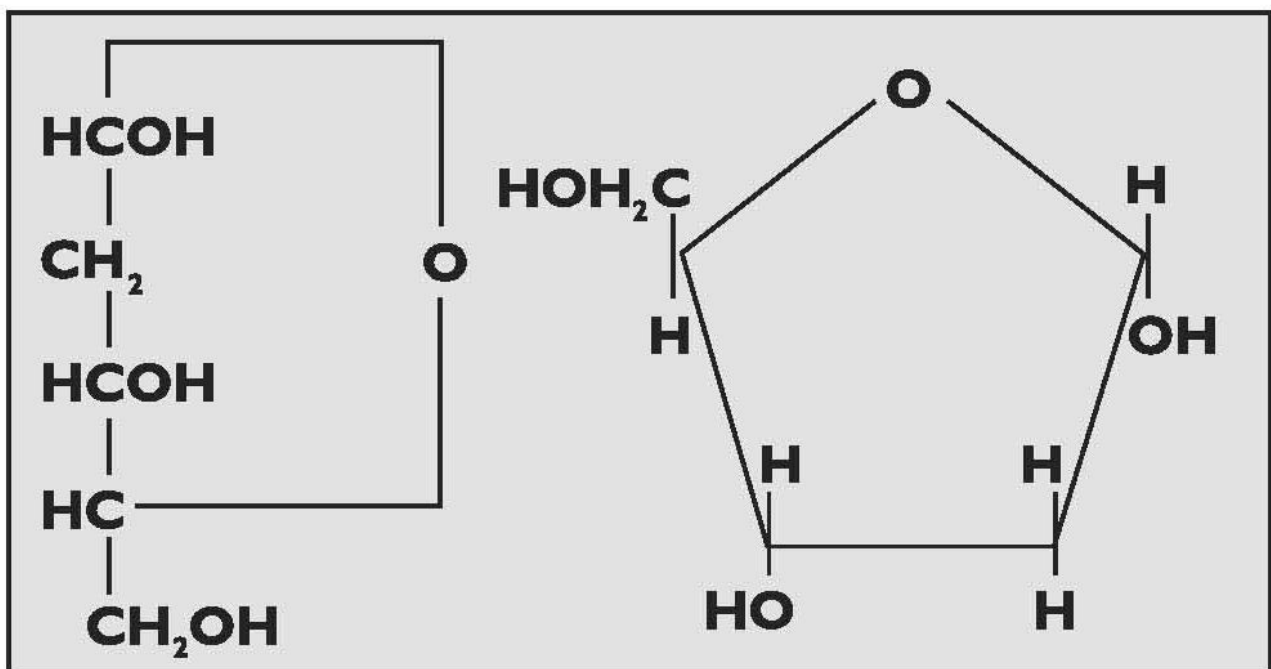
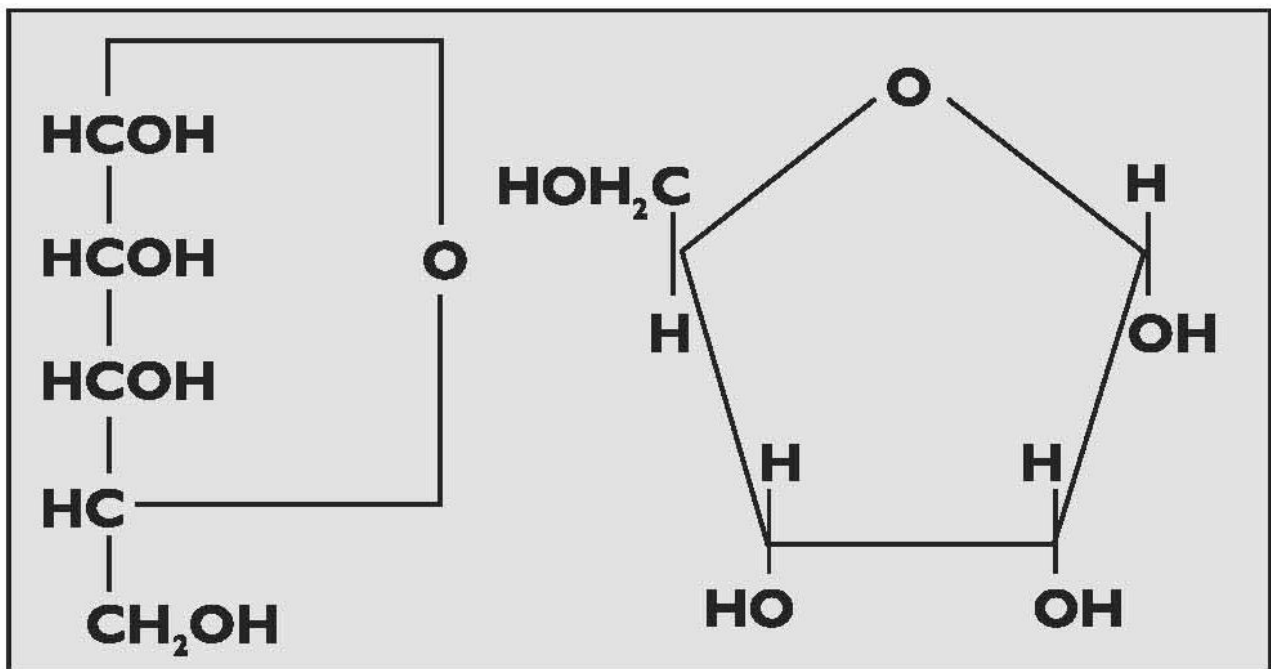
POTASSIUM ASCORBATE

Potassium ascorbate is a microcrystalline, water-soluble, white salt which is rather unstable due to its easy oxidizability. In solution, if closed in glass vials and submitted to pasteurization or sterilization it slowly becomes first yellow, then brownish.

The presence of highly reducing sugar does extend its stability in solution.

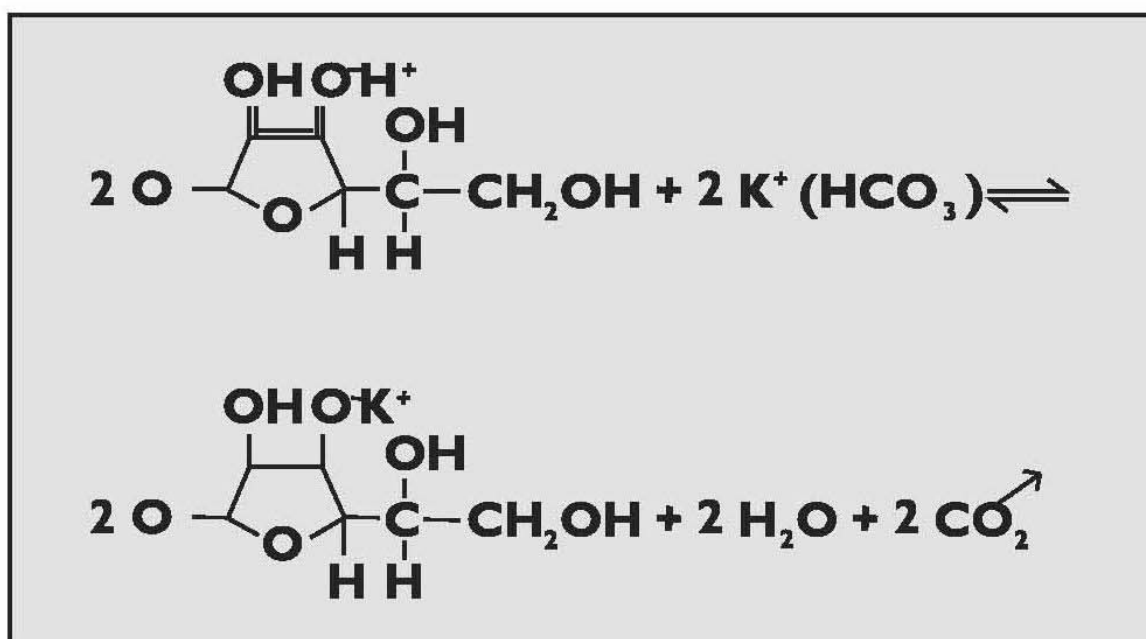
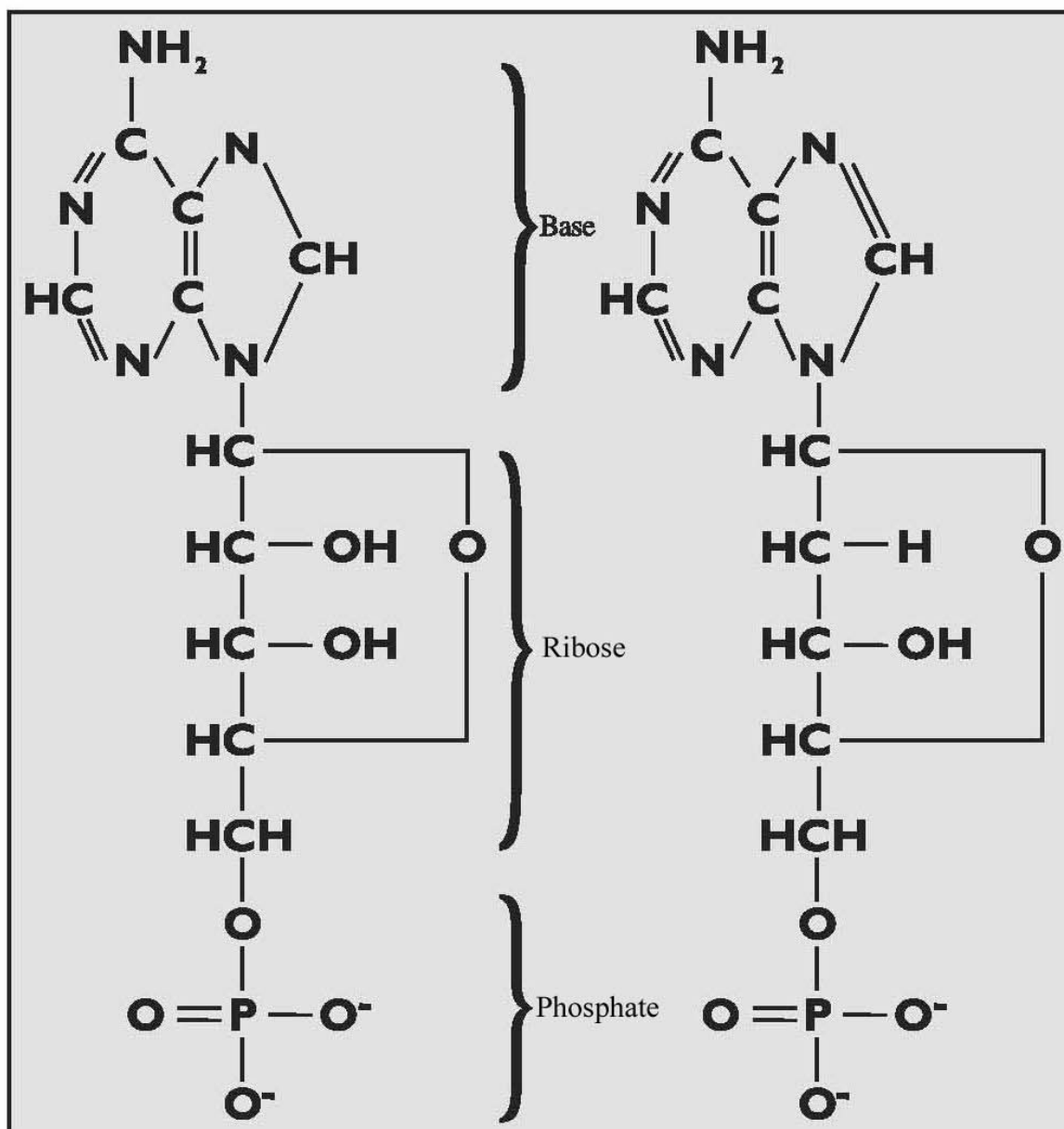
Potassium ascorbate is obtained through salification of ascorbic acid in cold water solution. It may be obtained in a very pure condition through high vacuum evaporation. When in solution it has a ferrous metallic savour like blood; it has no toxicity at all and may be used for a long time. From a

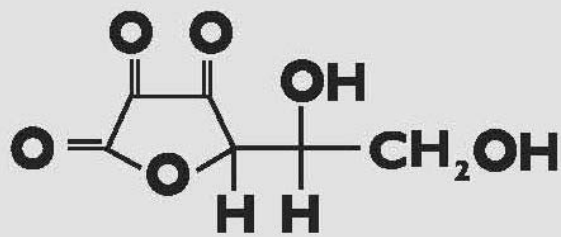
biological point of view it follows the destiny of Ascorbic acid. As a an ascorbic acid derivative it may assume two different structural formulas: the enolic and furanoid forms, the latter becoming such when said salt is in solution.



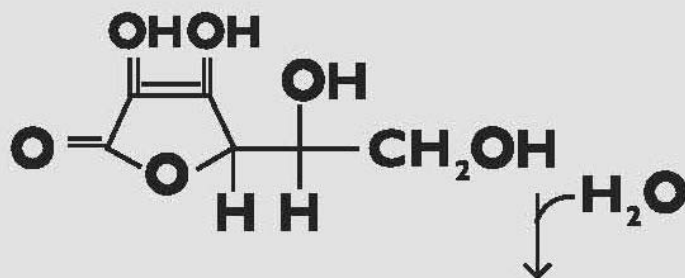
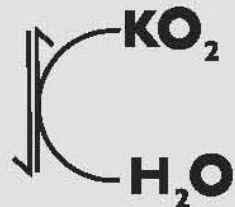
Up: D-Ribose structure: conventional and stereochemical representation

Down: 2-Deoxyribose structure



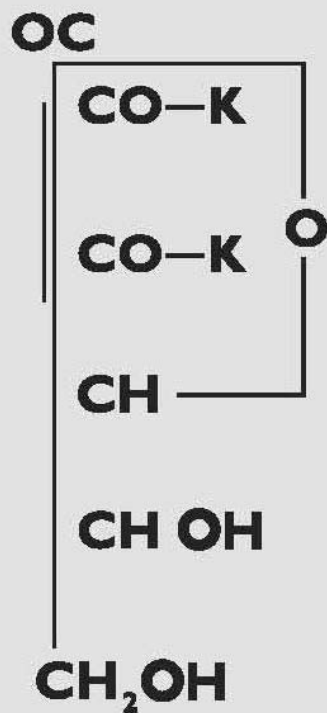


Dehydroascorbic Acid

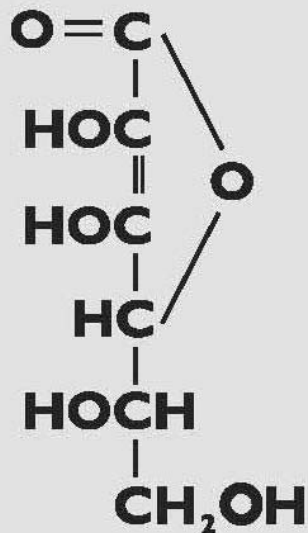


Ascorbic Acid

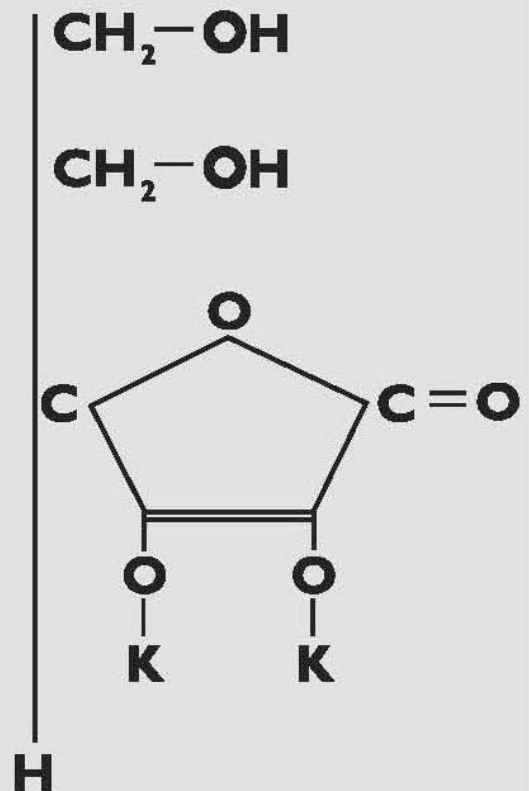
Potassium Ascorbate
Enolic form



Ascorbic Acid



Potassium Ascorbate
Furanoid form



Subject to the same condition of the previous experiments I started a new experiment by administering Potassium ascorbate to various cancer patients: each patient was given a dose of 0,90 g subdivided in two 0,45 g dose twice a day, 45 minutes before the main meals. In about 20 days a more or less marked improvement was reported for the first time in almost each patient. The improvement was characterized by: recovery of strength and appetite, reduction of pains, increased body weight, normalization of the blood formula.

Some patients improved to the point of resuming their normal activities. This improvement lasted a few years for some patients, for others just a few months, then the disease resumed its evolution till the end. This is concisely what was observed both by myself and the doctors assisting me in the course of the experiments. I haven't prepared any statistic. I can only say that one thing has been definitely ascertained, i.e. the administration of potassium ascorbate does improve the general condition of a cancer patient.

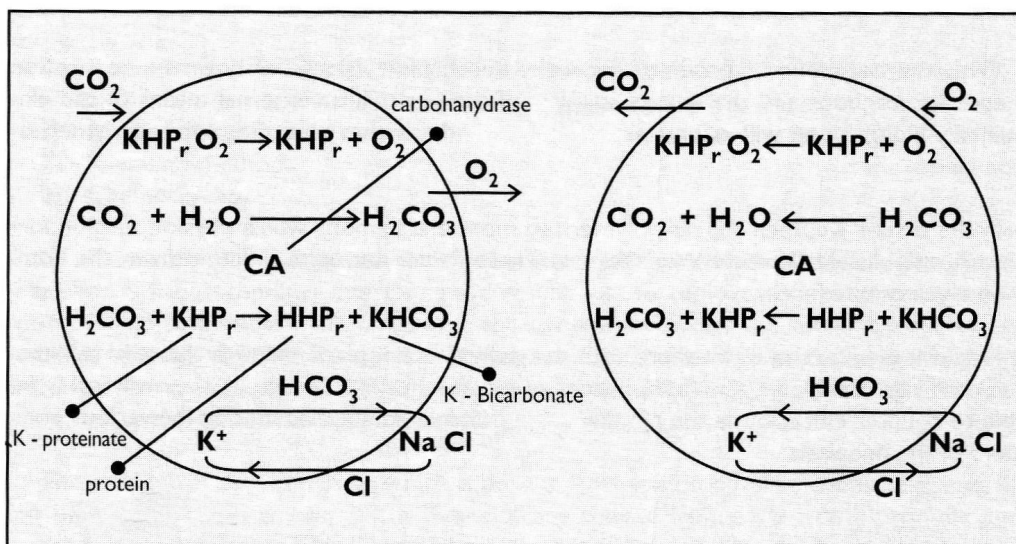
POTASSIUM ASCORBATE: A SUPPOSED TRIGGERING PROCESS

According to a huge bibliography on the matter, K^+ Cation is always located inside the cell wall of tissues and erythrocytes in the form of Potassium protein and hemoglobin. On the contrary Na^+ Cation is prevailing in the pericellular fluid and in serum. Said Cations are physically and chemically similar as they belong to the same group of alkalines, and they appear to be in a mutual equilibrium inside our body thanks to the buffer process. It still remains unknown why K^+ Cation is contained inside cell walls (separation interface) and Na^+ Cation is outside the walls, while anions HCO_3^- , Cl^- , PO_4^{3-} , ecc. run freely both ways without any difficulty. This process is governed by catalysis activity of Carboanhydrase.

To explain the physican and chemical condition of said cations it would not be sufficient to appeal to phenomena of osmotic pressure, or of Ph, or of H pressure (r-H), or of electrostatic equilibrium, or of cell wall potentials.

I do believe this phenomenon may be rightly defined only from a chemical point of view, that is to say that thanks to its chemical affinity Potassium does salify hydrogen atoms present in the amino acid groups inside the cells and the erythrocytes; the same cannot be said of Sodium as it has less chemical affinity for said hydrogenated groups, therefore it is shut out. It is thus established that, due to chemical affinity, Sodium truly regulates, both in serum and in pericellular fluids, the alkali reserve whereas Potassium, due to its affinity with the hydrogen groups of amino acids present inside the cell walls, does regulate actively the phenomena of oxide-reducing interchanges of the same, maintaining at a constant level the proteic level needed for an orderly structuring of the complex cell framework. Furthermore, it is actively involved in the breathing phenomena of the same.

The following schematic diagram allows a clear exact look of this phenomenon.

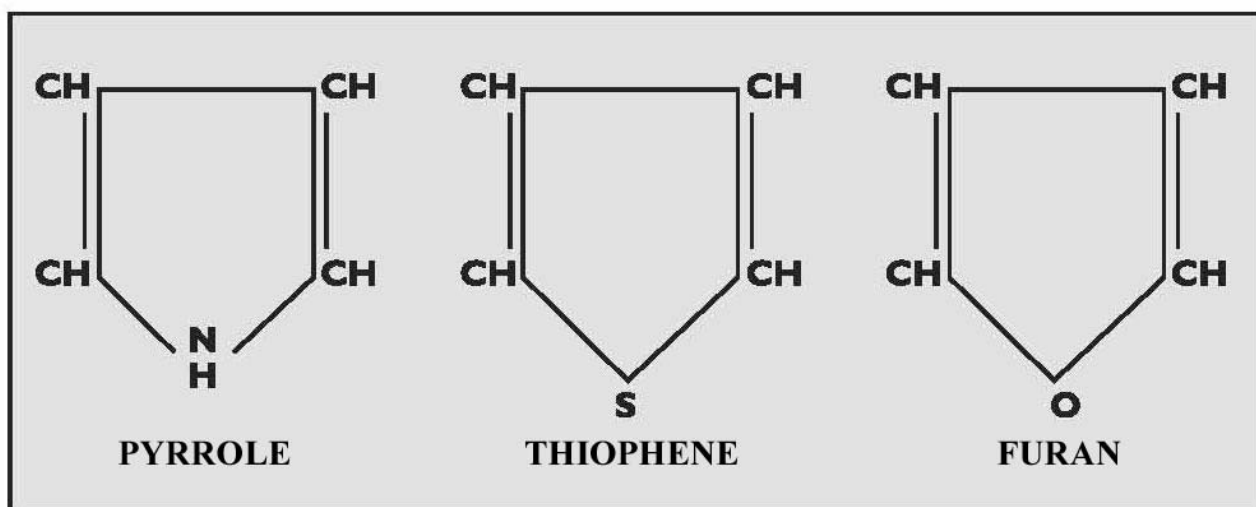


A similar reaction occurs inside the cell during the cellular self-analysis. In lieu of DK hemoglobinate the formation of K proteinate takes place.

THE PYRROLIC RING AND ITS IMPORTANCE IN THE LIVING MATTER STRUCTURE: ANALOGIES WITH FURANOSIC AND THIOPHENIC RINGS

The importance of the Pyrrolic ring and its relationship with many fundamental products of the animal and vegetable life is unquestionable. Both the blood hemoglobin and the plant chlorofyll contain pyrrolic rings in their molecule; furthermore many fundamental amino acids are to be considered pyrrole derivatives. It is to be noted also that the black pigments of animals, i.e. skin, hair, moles or birth-marks, etc. are in close relationship with pyrrole black spots, which allows the assumption that said pigments are oxidized compounds and polycondensed compounds having a pyrrolic structure.

Pyrrole, thiophene and furan are similar and isologous among themselves and therefore in the formation of their compounds they follow the rule of analogies (Angeli). It is therefore reasonable to assume that during the biological synthesis process of protein derivatives from such compounds there may occur chemical and physiological relationship and that under some particular condition a pyrrolic group may be replaced by a similar thiophenic or furanoid group.



Both potassium hemoglobinate and potassium proteinate contain pyrrolic structures which can be

salified with KHCO_3 . Now it happens that potassium ascorbate contains in its molecule a furanosic group which by analogy may replace one of the pyrrolic groups of potassium proteinate and hemoglobinate. These groups appear to have been definitely inactivated at the beginning of cancer growth.

It is very likely that the starting point of a neoplasia is the peptide molecule containing pyrrolic groups at the RNA level.

My assumption is that the opening of the pyrrolic molecule (Ciamician effect) may - in particular physiologic condition - give rise to a triggering of RNA polymerization, this being the beginning of the biologic phase of a neoplasia.

With the beginning of polymerization the subsequent course of both the absorption metabolic reactions and the energy supplies of the pericellular external means of the elementary biologic unit will assume an indefinite steady rhythm according to the polymerization rules.

In the tissues will then appear polymerized monomers among which physical tension forces are established (Van der Waals forces). These forces are quite different from the common electrostatic forces.

Hence it is of no use to interfere with the growth of neoplasia through chemical substances or drugs capable of generating forces of electrochemical nature, as they will never be able to counter efficaciously the physical tension forces established among the various polymers of the neoplasia.

CONCLUSION

In view of the above it is my opinion that:

- 1) The specific action of potassium ascorbate is due to said cation salified at the ascorbic acid furanosic ring. This group may well replace by analogy the pyrrolic group believed to be inactivated restoring the structuring phenomena of cellular auto-synthesis to the required physiological normality.
- 2) The invariable course-based polymerization energy which is present in the neoplastic phase is interrupted by introducing into the cell the vicarious group formed by potassium ascorbate, thus re-establishing the equilibrium amongst the intermolecular forces of the peptide groups which are present inside the cell membrane. (*Venice, May 22nd, 1983*)

NEW TRENDS IN THE THERAPY OF TUMORS FROM A BIOCHEMICAL AND IMMUNOLOGICAL POINT OF VIEW

For many years science has been searching for an answer to the harassing problem of the beginning of tumors. Methods of medical treatment have been established, but the results appear to be rather poor. So far what has been done in the huge struggle aiming to defeat such a terrible disease is rather odd, anomalous and confused, to the point of even accepting paradoxes such as that of Haddow.

This uncertain way of proceeding into the research is mainly due to the confusion still involving the research carried out by medical, pharmacological, chemical and physical sectors whose efforts have never been directed to reaching a single common end, through comparative methods. In point of fact these scientific disciplines have pursued diametrically opposite ways with conflicting results.

The theories expressed by each scientific discipline were completely independent one from another,

mostly supported by manipulated surveys and untruthful statistics.

At present three are the basic methods of treatment used today:

- 1) Surgical method
- 2) Radiation method
- 3) Chemotherapy

Of said methods the only one which may give excellent results is surgery. The second method (radiation therapy) may give good results just to remove cutaneous tumors or in case of deep inoperable tumors reducing their compression and the relevant troubles. This method may be used with a certain confidence, though with great care especially with elderly persons: in exceptional case it may be used with the very young, provided the location and type of tumor has been carefully investigated.

The method of chemotherapy, which is essentially based on covered chemical agents, has no effect at all on any tumor. On the contrary if used frequently it will produce very serious organic damages. These harmful chemical agents undermine the basal system of the human body causing tumoral metastasis to spread everywhere more rapidly. When this method is used in association with the other two methods, it does worsen or even nullify any benefit so far obtained through the other methods.

Recently two more methods have been introduced:

- 1) immunotherapy, which is a method aiming to stop and destroy the tumor by raising the immunodefenses of the body.
- 2) Biochemistry, a method which is essentially based on the use of ascorbic acid and sodium or potassium ascorbates. This method originates from the theories of Pauling, Cameron, Stone et alias. Whereas they encourage the use of ascorbic acid to prevent and fight the onset of cancer, I personally do use and suggest the administration of Potassium ascorbate.

This is a salt of ascorbic acid, which has proved to be much more active than pure ascorbic acid and sodium ascorbate. In point of fact the dosage of Potassium ascorbate administered to cancer patients is definitely lower than that used and mentioned by American authors, i.e. 10 g a day against 0,90 g a day of K ascorbate, as I do suggest.

The theory I am going to explain, i.e. the use of Potassium ascorbate as an anti-cancer substance, though a little incomplete, will attempt to explain the genetic process on which Potassium ascorbate does interfere.

THE FORMATION OF LIVING MATTER

It is not sufficient to look surprisingly at a living organism today and think of its immediate future. The most important thing is to study it in all its future physiological and pathological aspects and search into its very remote past, as well, that is to say the time when this organism came to be a living matter. This study must include in and extends from its early biological forerunners which originated millions of years ago to its present complex structure.

Among the 92 elements of the periodic system, only 29 of them were capable of synthesizing in the early oceans the following biological forerunners at a temperature between 37° C and 60° C and at a Hg pressure of 730 + 770 mm:

- 1) Plenty of amino acids, 20 of which are considered fundamental.
- 2) Pyrimidines (Uracil, Thyamine, Cytosine)
- 3) Purines (Guanine and Adenine)

- 4) Sugars (D-Glucose - D-Ribose)
- 5) A polyhydric alcohol (Glycerol)
- 6) A nitrogenous alcohol (Choline)
- 7) A fatty acid (palmitic acid)

This synthesis was shared in by molecules and atoms of elements which were excited by radiant energy, particularly by solar energy, in a reducing atmosphere.

They are:

H^+ , CO^{--} , CO_2^{--} , NH_3 , CH_4 , H_2O , H_2S , K^+ , Ca^{++} , Na^+ , Cl , S^{--}

In the reducing atmosphere two molecules are very important, i.e. the H_2O molecule and the H_2S molecule. In the inter-reactions occurring between the two above said molecules, it is very likely, that S^{--} belonging to H_2S has become transformed into P^{4-} , due to the Kervran effect.

In such an environment we came perchance to have a certain quantity of phosphates and free phosphoric acid as energy conveyors. Thus particular groups of biological forerunners developed and due to Mg^{++} came the first photosynthetic porphyrines which owing to the action of solar energy were able to convert the reducing atmosphere into an oxydizing atmosphere releasing O_2 .

This transformation allowed, through an oxidoreducing process, the self-production in our planet of big biological molecules such as proteins and nucleic acids. The earliest nucleic acids initiated a non perfect code transcription, thus crgating an ever increasing quantity of undifferentiated living matter.

Undoubtedly all this occurred in a quite long period of time until a few genes belonging to these sequence of DNA were able to differentiate and repeat exactly the genetic transcription (Structural or self-regulating genes?). This question proved to be true because, together with said genes, differentiated structures of Protozoans and Metazoans were suddenly originated. Now, the questions to be answered are the following:

- 1) What was the X factor or what were the X factors which governed the disordered growth of living matter, thus developing the genes and their enzymatic system which led to the social structure of present day organisms?
- 2) Throughout this evolution, what kind of antibodies were present in the living matter; ready to defend it if in a hostile environment? How to identify them in our organism, today?
- 3) Is it possible to locate among the biological forerunners any element or molecule which may help us to stop an uncontrolled reproduction of the living matter: such as the one iust mentioned, before the self-regulating genes appeared?

It is my definite opinion that the onset of a tumoral emergency is nothing but the coming again into being of an evolutionary structure of the living matter, as occurred millions of years ago. This happens again today when the self-regulating genes of the chemical cellular process become inactivated within their enzymatic chemical process owing to any kind of stress. Such an emergency cannot be controlled without first re-activating the enzymatic chemical process connected with the self-regulating genes.

The above mentioned genes were recently identified by Marks (USA), though their enzymatic

system is still to be identified. I hope Dr. Konberg may soon come to discover this mechanism.

It is my personal opinion that the enzymatic system in question is the X factor or factors, previously mentioned. Millions of years ago these factors initiated an exactly codified differentiation from the confused protein mass to perfectly structured living organisms as the present ones.

In the course of my research into the biological forerunners capable of structuring an exact genetic code I considered the following sugars: Ribose, Ascorbic acid and its relevant salts, Na Ascorbate, Ca Ascorbate, Mg Ascorbate and K Ascorbate, being extremely reasonable the assumption of interdependence in the genetic reactions of reversible transformations between a structure of Ribose and a structure of Ascorbic acid or of its relevant salts in solution, owing to either a loss or acquisition of H₂O and of CO₂. This takes place at the cell metabolism due to the enzymatic action, as required. During these metabolic reactions the Ascorbic acid free radicals help strengthening the basal substance structures in which the cell is plunged, through the mediating action of the extracellular Ca⁺⁺ cation to the protoaminoglycans and the glycosaminoglycans. These structures are essentials to maintain code signals between cell and cell and in particular among all the self-regulating genes of the cell itself. I believe that K cation is the most important of the cations salified with ascorbic residues. This cation being located inside the cell is certainly essential to maintain the enzymatic process of the self-regulating genes of the cell itself.

Dear colleagues this concludes my briefing on a theory I had exposed in 1974 at the International Congress on Cancer held in Florence, Italy. At that time I was almost laughed at for my statements on the genetic origins of tumors. Today I am sure they will not behave any longer like that.

I feel very thankful to the New York Academy of Sciences for their assistance. Thanks to them I have had free access to a lot of written material, which I would not have the chance to consult in Italy due to the limited budget of my research.

Finally, let me close with a suggestion by Prof. I. Iridwick from the Research Laboratory of the Dodge Chemical Company, Bronx, New York that, when we venture in a research on the origin and evolution of organelles and their inherent intracellular reactions in the Eukaryotes:

"Even if it isn't true, it's well found!"

Ribose

Up to now, the following considerations have been written directly by Doc. Gianfranco Valse' Pantellini, during the '70s of the last century.

He left to us an extraordinary intuition, thinking to add ribose to the ascorbic acid in order to obtain a "double" potassium salt such as ascorbate and ribosate; he believed indeed that this molecule could have a catalytic activity in accelerating potassium absorption into cells and in minimizing RNA polymerization, which the structure is based on ribose.

Ribose (in its dextrorotatory form) is a penta-sugar (aldopentose monosaccharide) analogous and isologue to ascorbic acid, sharing the same furanoid structure. It is held in all the living cells and it plays a fundamental role in their metabolism. It is directly involved in the synthesis of nucleotides and it is a preminent component of DNA (as deoxyribose), RNA and adenosine, which is an essential constituent of energetic molecules like ATP (adenosine triphosphate) and sodium/potassium ATP-ase (the so called Na/k pump).

Our body can synthesize ribose, but in some cases this process can be limited or, in a worse, damaged (this fact was evidenced in scientific works in the United States in the 50's).

When it is taken orally, it is metabolized and does not interfere (at least at the dosages recommended by the Pantellini Foundation) with glycolysis. At room temperature in crystallized form, it appears like a scentless white powder, and it is completely soluble in water.

The use of ribose, at low concentration compared to acid ascorbic, can be explained by its potential catalytic activity in order to accelerate potassium absorption process into cellular cytoplasm, also because it does not biologically follow the destiny of the Vitamin C (after very few hours from administration it turns into oxalic acid and leaves the organism by kidneys) but it is "consumed" differently.

Also, potassium ascorbate with ribose can work effectively as prevention, having the purpose to maintain a constant potassium level in the cells. The preventive administration of potassium ascorbate has therefore the aim of "protecting" the cell from a degenerative hazard.

Generally, one dose a day on an empty stomach (usually in the morning) of this compound is a preventive intake for adults (except otherwise indication based on blood tests). In oncologic pathology, usually, three doses a day are recommended (at least 45 minutes before breakfast, lunch and dinner, on an empty stomach as a rule).

It is strongly recommended a valuation made by competent staff, in order to suggest the right dose.

Pantellini Foundation
Via Pascoli n° 2, 50129 Firenze (FI), Italy
Web site: www.pantellini.org
Email: fondazione@pantellini.org
Tel: 0039055499634
Fax: 0039055599616



Dr. Gianfranco Valsé Pantellini is a graduate in Pure Chemistry (organic and inorganic) at the University of Florence, Italy. He worked with Prof. Giocondo Protti at the Ancona Tumor Centre since 1946, where he carried out enzymatic research work on leavens and on the dissolving action of the same against

tumor cells. He attended several Congresses on Cancer among which Florence, Cremona, Baden Baden, New York, etc. with lectures on his own research work. He is a disciple of the atomistic scientific thought from Ettore Majorana and Saent Gyoägyi. He maintains scholarly contacts with various research centres in line with the research of Linus, Pauling, Kemberg, Marks, Lapis, Zsende, Kervran. He is a member of an international cancer research group applying non- conventional research methods. He has been made member of the New York's Academy of Science and of the International Society of Cryosurgery