## CHAPTER 1

## THE POSTULATE

The initial work that spearheaded the Survival Factor Investigations was a research into the cause of the convulsions and deaths that always followed complete parathyroidectomy. The findings were published in "*The Journal of Biological Chemistry*"—12; 313, 1912, Koch, and 15; 43-63, 1913, Koch. This work was confirmed by Prof. Patton and his staff at the University of Glasgow and published in the "*Quarterly Journal of Physiology*" in 1917 using two of the four numbers. For the care and excellency with which the confirmation was made, Patton was awarded the Triennial Prize in Medicine by Harvard University. This confirmation is of great importance because of the broad field of applicability of the facts brought forth and also the depth of their interpretations of disease processes.

The cardinal facts were just three:

(1) Guanidine, methyl guanidine, and some other toxic bases were produced in the tissues and eliminated in the urines in fatal amounts that increased until the dog died in convulsions;

(2) Calcium, lactate, and phosphate were eliminated in excess;

(3) The post-mortem findings showed ante-mortem coagulation of the blood in the large veins, and hemorrhagic degenerations of the liver and kidneys.

From these findings, several important conclusions were made, based upon:

(1) The chemistry of guanidine and its derivatives showing the activation of its amine group by its conjugation with an imide group, and also the tendency to deactivate this amine group by such substitutions as acetic acid as in creatine and amino-valeric acid in arginine.

(2) The fact that guanidine and methyl guanidine are highly toxic while

creatine and arginine are not.

(3) The large elimination of lactic acid even while the lungs were well ventilated showing that fuel was not burned via an oxidation process, but was fermented hydrolytically to produce lactic acid and thus the oxidation mechanism was blocked at its very inception.

(4) The block to oxygen transport in the blood and inter and intracellular fluids by the ante-mortem coagulation or gellation of tissue colloids that depended on the lack of energy production via oxidation to keep the colloidal particles charged on their surfaces and hence, a failure in their dispersion: the resultant failure in oxygen transport further blocked the oxidation mechanism in a vicious circle.

(5) The fact that the oxidations were blocked by an amine group of guanidine, that dehydrogenation is the first step in oxidation, that the Carbonyl group is a good dehydrogenator, and that it can be inactivated by condensing firmly with an amine group as in guanidine, but functions normally by condensing with a weakly activated amine group as in creatine to form an azomethine double bond.

The conclusions are the following:

(1) After Parathyroidectomy, the activated amine group of guanidine and methyl guanidine condensed with the Carbonyl group of the cell's energy producing mechanism for function (FCG) to form a firm azomethine double bond, and thus prevented it from initiating oxidations in fuels or toxins that came into the field.

(2) The failure to oxidize made it impossible to charge the tissue colloids and so they precipitated as a gel and did not flow through the capillaries and tissue spaces or even through the large vessels to carry oxygen to the intracellular mechanisms, so an anoxia or hypoxia was secondary to the inability to start oxidation chains.

(3) That the oxidations of highest quality are chain reactions started by dehydrogenations, free radical production, addition of molecular oxygen to the free radicals to form peroxide free radicals that carry the oxidation

chain or cause molecular cleavage into parts with terminal Carbonyl groups that promote further oxidation.

(4) That the Pasteur Effect was a function of this tissue cell functional Carbonyl group (FCG) and was suspended or destroyed by its condensation with tight binding amines as guanidine, but its function was supported by condensing with the weakly binding amine group of creatine after the hydrogen atom that the FCG removed from the fuel was passed on to an appropriate electron acceptor.

(5) That the Creatine-FCG azomethine bond is held until the energy developed as the oxidations progress caused phosphoric acid to enter this azomethine bond, combine the creatine and liberate it as a high energy carrying phosphate, and that the burning of fuel is regulated by the factors concerned, — the FCG, creatine phosphoric acid and stored energy.

(6) That toxic amines of various metabolic, bacterial, viral or of fungal agents (present day antibiotics may be included) are able to make the same crippling condensations with the FCG that no metabolic measure is able to break, and thus disturb the physiology in various ways.

(7) That to dislodge such toxins, it is necessary to oxidize them away, as no adequate hydrolytic provisions are available.

(8) That the double bond of the azomethine condensation activates the hydrogen atom of the carbon placed alpha and thereby provides for its easy dehydrogenation, and thus starts an oxidation progression via free radical, peroxide free radical and cleavage that burns away the amine group of the toxin or other pathogens and restores the host cell functional Carbonyl group.

(9) That the FCG is activated to be the preferred dehydrogenator through conjugation with the double bond of an ethylene linkage, which contributes electrons to it; additions to this linkage must destroy its activating powers.

We shall see how these conclusions fit into the pathogenesis of cancer

and viral infections, and determine the controlling therapeutic measures. It will be seen also that they explain the long unsolved Pasteur Effect, which we hold to be a splendid demonstration of the presence and action of the Functional Carbonyl Group, the FCG, as we designate it for short, and a solid proof of the correctness of our Working Hypothesis and Postulate.