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http://www.restandrepair.tv/

Mr. Robert L. King

Dear Bob:

It was a pleasure meeting with you again on Thursday. As we had discussed, I shall summarize some potential mechanisms for *pH Cleanse as a therapeutic agent. The three hypotheses that follow are based on my research experiences with chlorine dioxide and *pH Cleanse, the research that has been conducted in other laboratories, and the hundreds of testimonials that you have shown me describing the efficacy of the treatment of a variety of disorders. The first hypothesis addresses the topical application for the treatment of burns, abrasions, and allergic reactions. The last two hypotheses primarily describe potential mechanisms following ingestion or when applied topically for the treatment of bacterial and viral infections.

First, when applied topically the *pH Cleanse may act as an osmotic agent, similar to the application of Epsom salts. The concentrations of salts in *pH Cleanse even when applied in a 1% solution, is quite high. The ensuing osmotic gradient would be a sufficient driving force for the removal of toxins (from burns, allergenic substances) from the

skin. The same gradient may in a similar way promote healing by increasing the rate of transport of factors involved in healing (in the case of abrasions, burns). The aforementioned mechanism may appear simple, nonetheless it may partially explain the promotion of healing and desensitization of burns and rashes that you have documented.

Second, in either topical or internal use, the *ph Cleanse can act as a non-specific biocide. The chlorite, a major constituent of *pH Cleanse and one of its reaction products, chlorine dioxide, are extremely effective viricides, bactericides, and fungicides. We have shown chlorine dioxide to be extremely effective against pathogenic bacteria (e.g. Legionella pneumophilia) and enteric viruses (Poliovirus) in our laboratory. Its effectiveness against other viruses also has been demonstrated. (Please see the literature review by M. S. Harakeh). At physiological pH, the predominant chemical species will be chlorite ion. The chlorite is biocidal, yet less toxic than chlorine dioxide since it is a less powerful oxidant in the ionic form. At the pH of the stomach (pH 3-4) one can expect chlorine dioxide to be produced from the chlorites. This will be transient phenomenon, ultimately yielding chlorite ion, again, which will be absorbed by the body, passed through the lower gastrointestinal tract, and excreted by the kidneys. If a substantial dose of the *pH Cleanse has been taken, one could hypothesize that the chlorite and chlorine dioxide would act against any pathogenic microorganism in the body. This may explain the effectiveness of *pH Cleanse in lessening the severity and duration of gastrointestinal diseases (diarrhea, flu, etc) that have been reported to you.

The third potential mechanism of the *pH Cleanse involves utilization of chlorite by cells, particularly leukocytes, as a substrate to increase the efficiency of a group of enzymes known as peroxidases. These enzymes are an important component in the immune system since they are involved in the oxidation of foreign material (e.g. virus). The results of our own experiments with *pH Cleanse, modeled after Hagers work with chlorite, support his findings. Namely, *pH Cleanse (i.e., the chlorite it contains) significantly improves the efficiency of the two enzymes, chloroperoxidase and peroxidases. The reaction of another model system utilizing myeloperoxidase (mpo) in the leukocytes are given in equations 1 and 2.

$$1)\ O_2^- + O_2^- + 2H^+ \xrightarrow{SOD} O_2 + H_2O_2$$

$$2)\ H_2O_2 + ClO_2^- \xrightarrow{MPO} ClO^- + H_2O$$

or

$$Cl^-$$

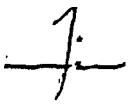
There are two interesting outcomes of chlorite utilization by these enzymes. The first is that the immune system may be directly enhanced by the increased rate of oxidation of foreign material by the leukocytes. The second result is an increased ability by all metabolically active cells to scavenge free radicals. This has been shown in equation 1 above. The rate of removal of the superoxide radicals (O_2^-) by superoxide dismutase (SOD) will be increased as the peroxide (H_2O_2) removal is enhanced by the chlorite (ClO_2^-) in the coupled second reaction (equation 2). The latter result, increased efficiency of removal of free radicals, is interesting in light of some contemporary theories attributing the cause of disease, debilitating aspects of aging and onset of

cancer to excessive levels of free radicals. The source of the free radicals may be environmental (e.g. UV radiation) or metabolic (e.g. H_2O_2).

These three possible mechanisms are, of course, not exclusive of one another. It is quite probable that all three act simultaneously. There are also undoubtedly other more complex mechanisms. However, the available data on chlorite is scant, therefore only the three aforementioned mechanisms have been proposed,

I hope this has been helpful in describing the mechanisms of *pH Cleanse as a therapeutic agent. I have been brief, but please don't hesitate to contact me if you wish to have any supporting literature or further discussions.

Sincerely yours,



James D. Berg
*As of 4-4-84 Stanford University granted Mr. Berg a "double doctorate" Ph.D. Environmental Engineering Medical Biology

JDB:kcr

*Study done for the manufacturer of pH Cleanse.