
REPORT
PREPARED FOR MINERALSTAR

**Bioavailability of Low Dose Plant Derived Minerals
and Amino Acids, pH BALM™ (pH balanced, Bio
Available Living Minerals)**

Prepared by
WILLIAM V. JUDY, PHD

23 January 2006

SIBR RESEARCH, INC.
4112 20TH STREET WEST
BRADENTON, FL 3420

REPORT

Absorption and Bioavailability Characteristics of Minerals and Amino Acids in a Liquid Form Nutritional pH BALM™ Fulvic Mineral Supplement

W. V. JUDY, PHD

INTRODUCTION

In the animal kingdom man is perhaps the only creature who washes and cooks his food prior to eating. In doing this there is no doubt that there is an immense nutritional loss. Animals that forage for food from the earth ingest their food as they take it from the earth and unlike man ingest large amounts of dirt. In doing this they are consuming fulvic minerals and humate. The rumen animals are also getting good bacteria that they need for digestion of cellulose. Throughout the world animals including man seek out and migrate to areas known to be rich in minerals (ex. Great Salt Lake). In these locations they scratch and rake the earth's crust to gain essential minerals for body functions. In doing this they are able to grow strong and stay healthy. However, both man and animals have suffered nutritionally from the modernization of agricultural practices.

Through the use of inorganic fertilizers, algicides, fungicides, herbicides and insecticides, Modern agriculture has made much of the earth's crust sterile and infertile. This has been done by killing the natural flora and fauna of the soil and by removing the animals that once roamed the earth foraging for food. These changes brought about by modern civilization have no doubt led to the degradation of nutrients in plants and foods taken from the earth's crust. This food industry has made an attempt to rectify this problem by fortifying commercially grown and processed foods with essential minerals and nutrient additives such as vitamins and essential amino acids. Therefore, there is no doubt that fulvic and humic minerals, amino acids, and other nutrients should be beneficial to all members of the animal kingdom, especially man, since we not only wash our food but also peel many roots and vegetables and otherwise destroy nutrients with heat.

The addition of fulvic minerals to grow crops should enhance plant growth and health and the growth and health of the animals that consume these foods. Unfortunately, the addition of fulvic and humic minerals is not the sole answer to the loss of vitamins and other chemical nutrients. Vitamins obtained from plants are not necessarily produced by the plants; nor is the soil fertility a sole product of plants. The microflora (micro organisms) and the macro organisms in soil are responsible for the minerals, vitamins, nitrogen and other nutrients needed for plant growth and soil fertility. These micro and macro organisms fix the nitrogen from air, they chelate minerals from salts

in the soil, and they ingest and cause the decay of dead plants (cellulose) to return trapped minerals and humus to the soil.

In summary, what we take from the soil must be returned. Modern farming practices have broken the ecosystem and in doing so destroyed the fertility of the earth's crust and the earth nutrient sources provided to man. Therefore, the need for fulvic and humic minerals is established for the entire animal and plant kingdom.

MineralStar's pH BALM™ Fulvic Mineral Supplement is stated to be "a rich source of bio-available Fulvic and Humic acid based micro and macro minerals and amino acids." This product is claimed to be a complete organic source of plant derived, pH balanced energy minerals, trace elements and amino acids. Very few minerals found in the soil are stable as free electrolytes. They are stable in salt forms. Fulvic acid chelates salt bound minerals away from the salt carrier molecules so they are readily available in an aqueous solution for plant absorption. Humic acid is an acid that is formed when humate is hydrated. Humic acid is stated to increase absorption cell permeability in plants and animals. Therefore, the micro minerals and amino acids should have enhanced absorption and bioavailability characteristics. The purpose of this feasibility study was to measure the bioavailability of the free electrolytes and amino acids found in the fulvic mineral supplement product in normal healthy volunteers.

METHODS

Five normal volunteers (three males and two females) between the ages of 35 and 56 years were subjects in this study. Control blood and urine samples were collected for complete blood count, lipid profile, complete metabolic profile (including liver function and renal disease panels), amino acid profile, and mineral profiles on each volunteer.

On days one through fourteen of the active supplementation phase, all volunteers received one ounce of the MineralStar's pH BALM™ Fulvic Mineral Supplement in an eight ounce glass of non-chlorinated water. After fourteen days a second blood and urine sample was collected. All samples were prepared for shipment and analyses as directed by an independent outside CLIA certified laboratory. These samples were analyzed for complete blood count, complete metabolic profile, lipid profile, amino acid profile, and mineral profiles. Standard clinical analyses were done for each of the amino acids and ten of the sixty-five (65) minerals listed on the product label.

All data was entered into a data management system (Microsoft Excel). Descriptive statistics were calculated on each group for control and fourteen day data. Statistical differences between the control and experimental means were determined using a paired t-test between group means with the same N-value. A probability of $p \leq 0.05$ was accepted as significant.

RESULTS:

I. ABSORPTION AND BIOAVAILABILITY OF THE MINERALS IN MINERALSTAR'S pH BALM™ FULVIC MINERAL SUPPLEMENT

Ten of the sixty-five minerals (15%) listed on the Fulvic Mineral Supplement label can be measured by standard clinical tests. The group means levels showed that the levels at the end of the supplementation phase were increased in six of the ten minerals (60%). Three of these, calcium, potassium, and selenium, were significantly increased ($p \leq 0.05$). However, neither of these was increased beyond the normal range.

II. ABSORPTION AND BIOAVAILABILITY OF THE AMINO ACIDS IN MINERALSTAR'S pH BALM™ FULVIC MINERAL SUPPLEMENT

All eleven of the amino acids listed on the label of the MineralStar's pH BALM™ Fulvic Mineral Supplement were measured in plasma.

After fourteen days of supplementation, nine of the amino acids (glutamic acid, glycine, histidine, alanine, valine, methionine, isoleucine, phenylalanine, and tryptophan) were increased. Only tryptophan was increased significantly, $p \leq 0.05$. However, this was still in the normal range.

III. CHANGES IN BLOOD CHEMISTRY

Individual volunteer variations were obvious for the control and post supplementation intervals. However, none of the individual levels or group means was outside a normal range.

IV. CHANGES IN HEMATOLOGY

Hematology data was collected fourteen days after daily supplementation with MineralStar's pH BALM™ Fulvic Mineral Supplement. The white blood cell count (WBC) was decreased, whereas all other parameters (red blood cell count [RBC], hemoglobin [hgb], hematocrit [hct], and platelets) were increased. The difference between control and experimental group means was significant ($p \leq 0.05$) for RBC, hgb, and hct.

V. SIDE EFFECTS

During the fourteen day active supplementation phase, volunteers were asked to note any side effects. None of the five volunteers tested experienced any adverse side effects while supplementing with the MineralStar's pH BALM™ Fulvic Mineral Supplement. One of the volunteers reported an increase in energy.

Discussion and Summary

MineralStar's pH BALM™ Fulvic Mineral Supplement consists of free electrolytes and amino acids that should be readily available for absorption by the intestinal cells. In this study of the ten minerals measured in blood after the active supplementation phase six were increased, three were increased significantly over the control levels. These data suggest that a majority (60%) of the minerals measured were absorbed as indicated by the slight increase in blood.

Nine of the amino acids (82%) in the formula increased in blood, one was significantly increased.

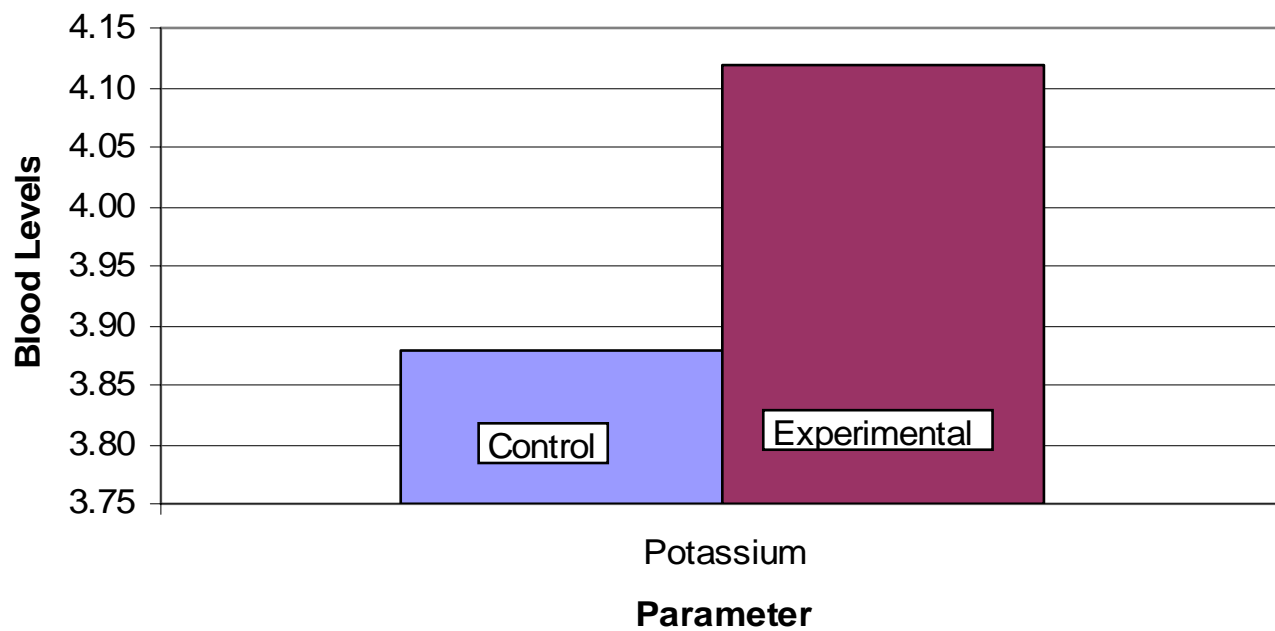
The safety issue of supplementing the minerals and amino acids found in MineralStar's pH BALM™ Fulvic Mineral Supplement were evaluated in this study by measuring blood chemistries indicative of liver, kidney and other organ function. Twelve of the sixteen (75%) measured blood chemistries increased. However, none of these chemistry changes were outside normal ranges. Therefore, it must be concluded that for the dosage tested, this product is safe for at least fourteen days.

Another safety issue was assessed by the hematology of blood. White blood count (WBC) was normal and not significantly changed by the product. Red blood cell count (RBC), hemoglobin (hgb), and hematocrit (hct) all increased significantly with fourteen days supplementation. The platelet fraction did not change significantly. It appears that the MineralStar's pH BALM™ Fulvic Mineral Supplement may stimulate red cell production. The increase in hematocrit could most probably be due to the increase in red blood cell count since the white blood cell count did not increase and the platelet count, although it increased, did not increase significantly. The increase in hemoglobin is understandable due to the red blood cell count increase and the increased iron absorption.

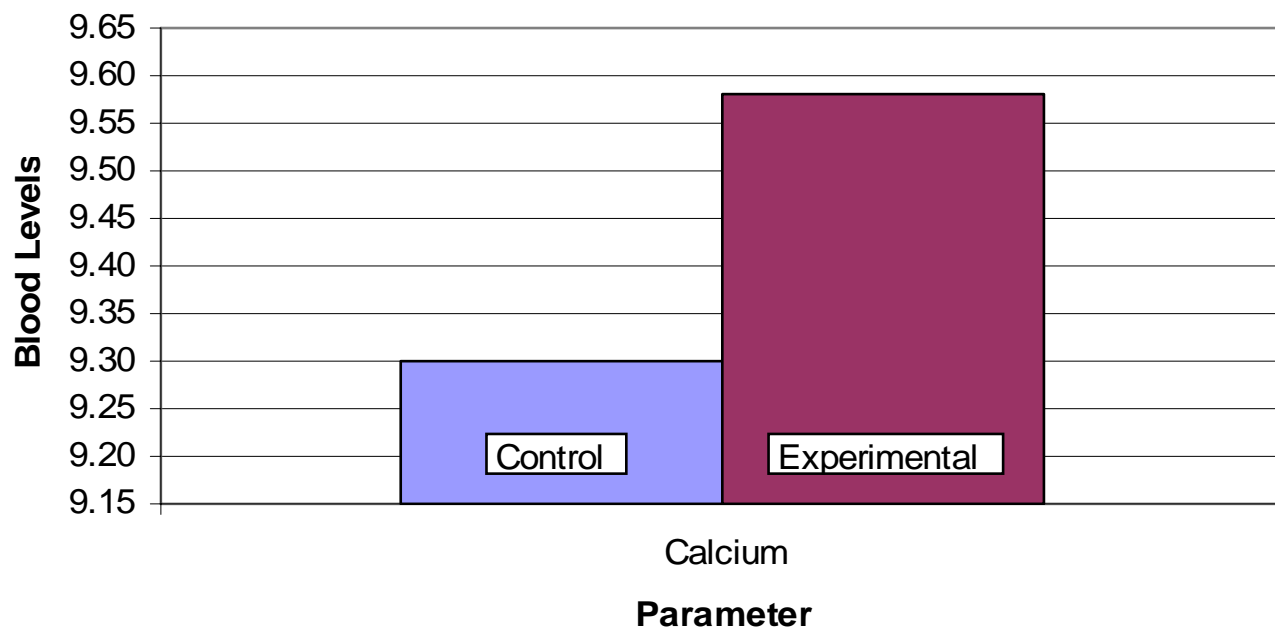
In conclusion, these results suggest that at the minimum suggested dose, six of the ten minerals (60%) in the MineralStar's pH BALM™ Fulvic Mineral formula that were measured by a standard clinical test were absorbed. Nine of the eleven (82%) measurable amino acids were also absorbed. Three mineral and one amino acids appeared to be significantly increased after fourteen days of supplementation at the dosages tested.

At the dosages tested (minimum recommended dose) the product appears to be safe relative to any abnormal blood chemistries indicative of liver or kidney function. The results also show a mild and significant stimulation of red blood cells and hemoglobin.

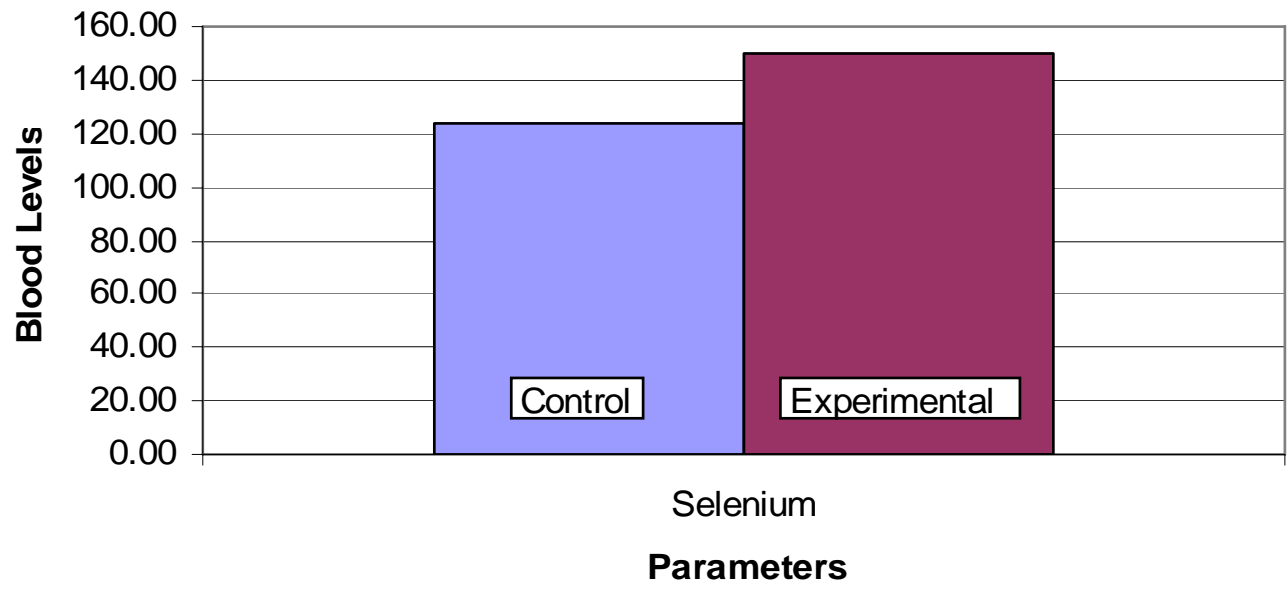
Potassium

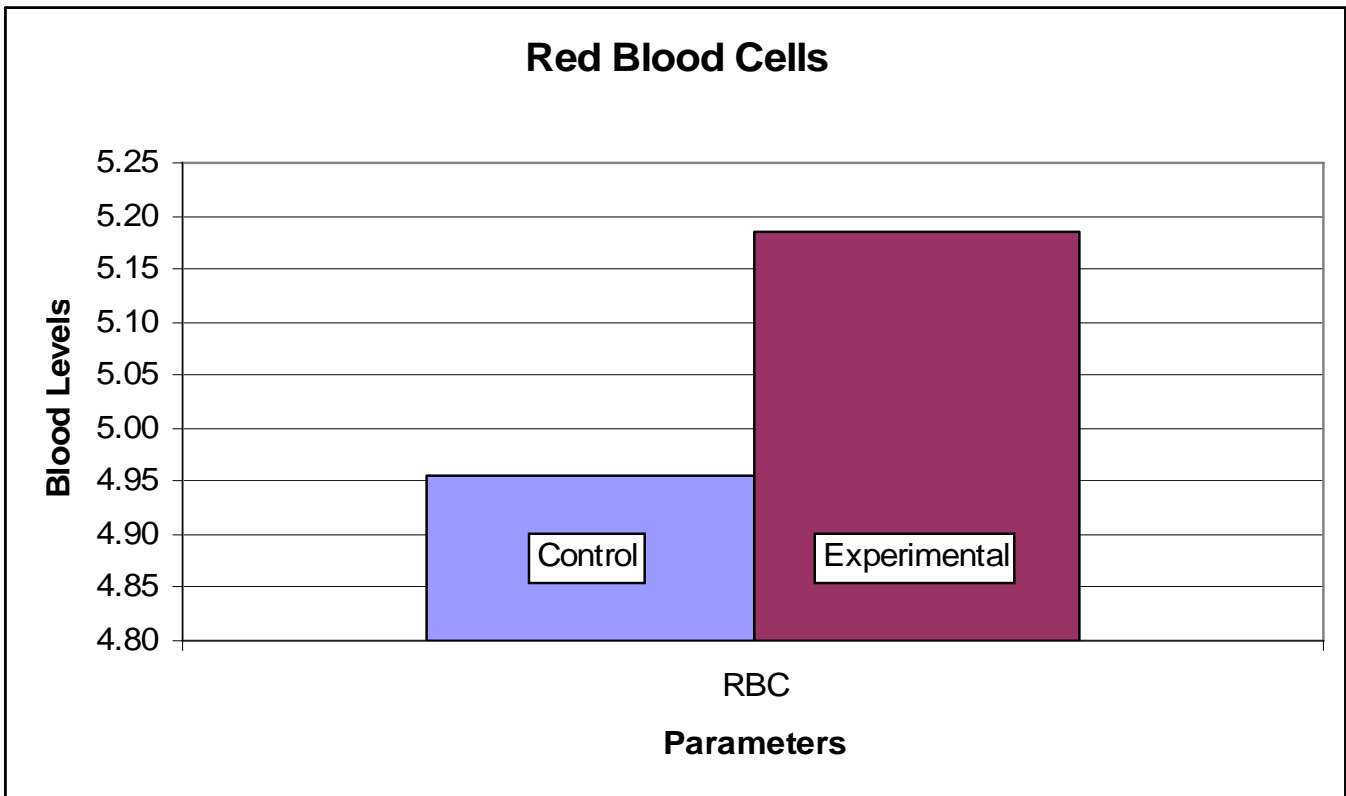
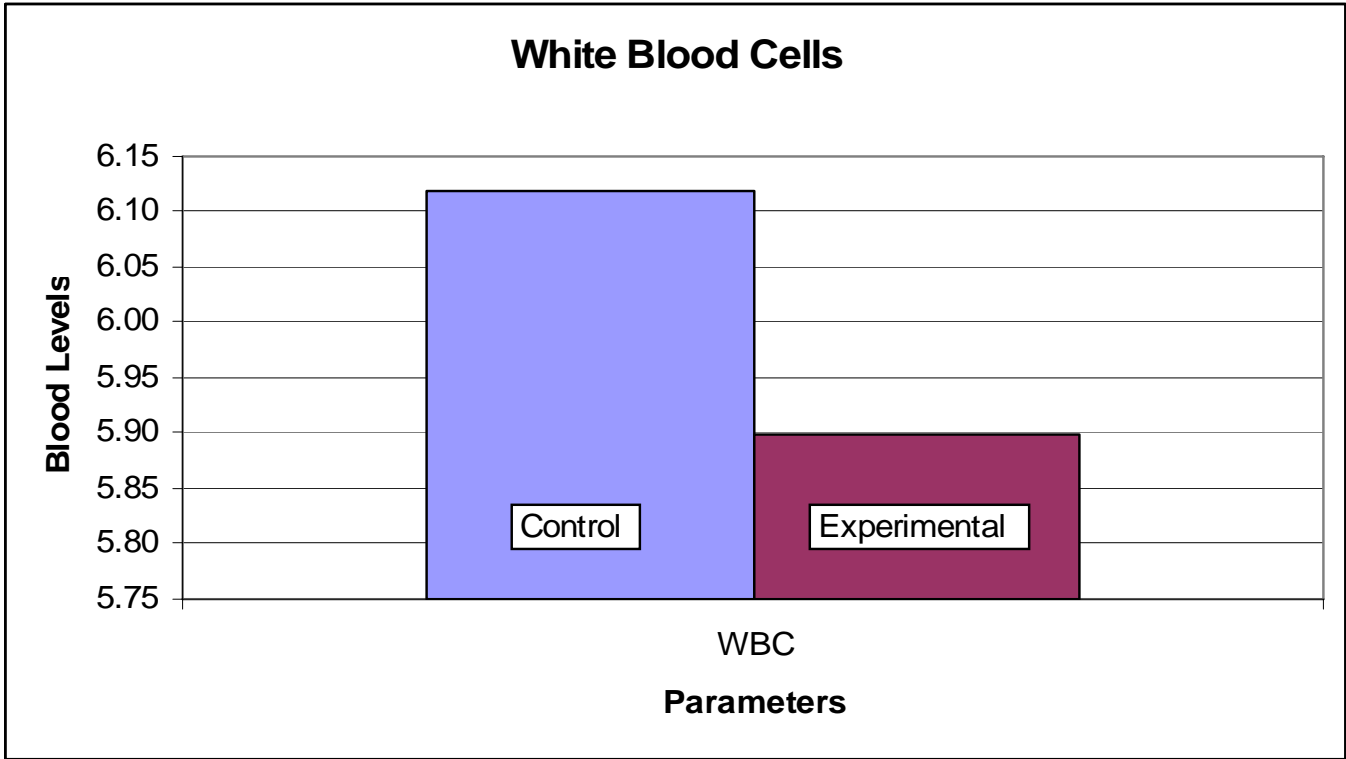


Calcium

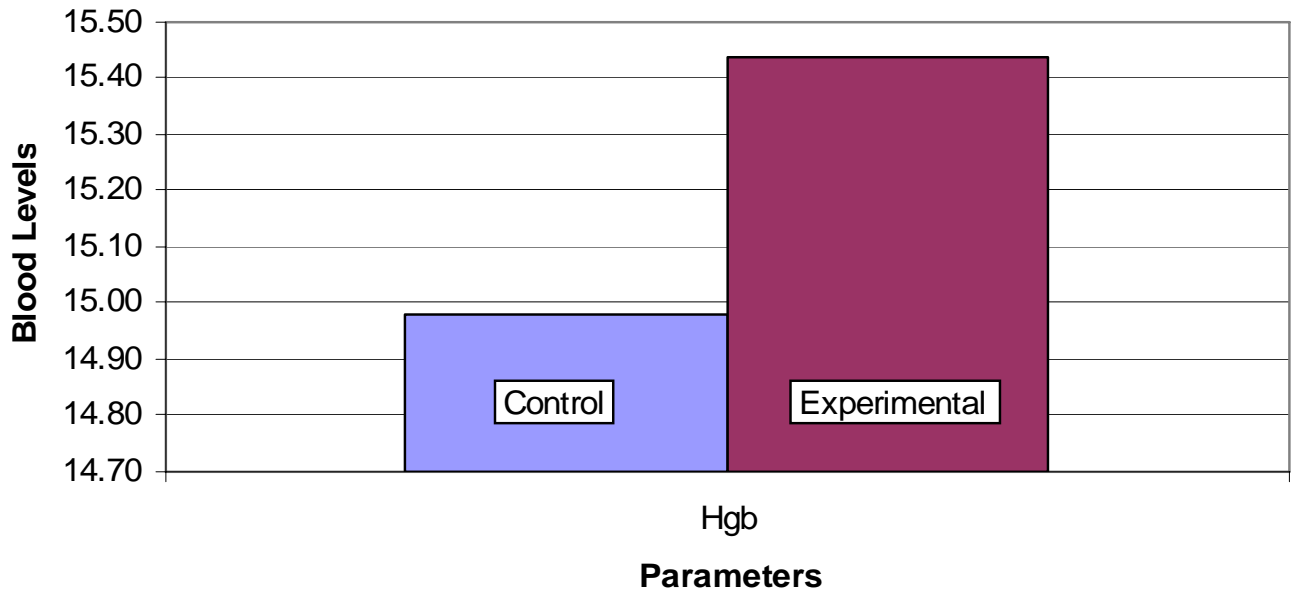


SELENIUM

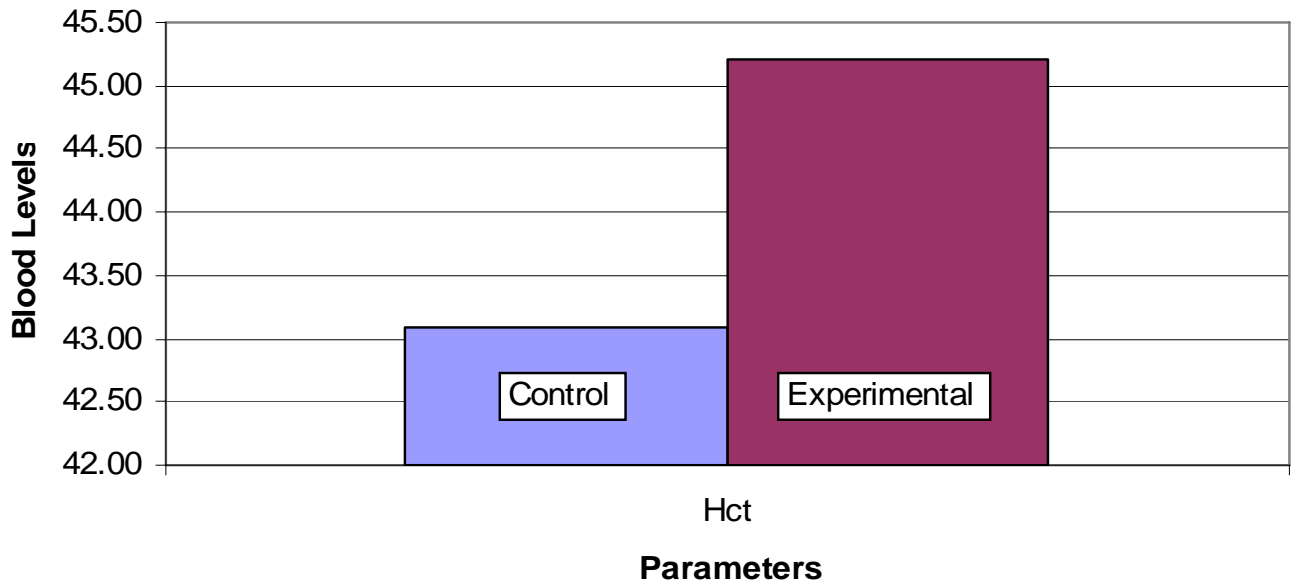




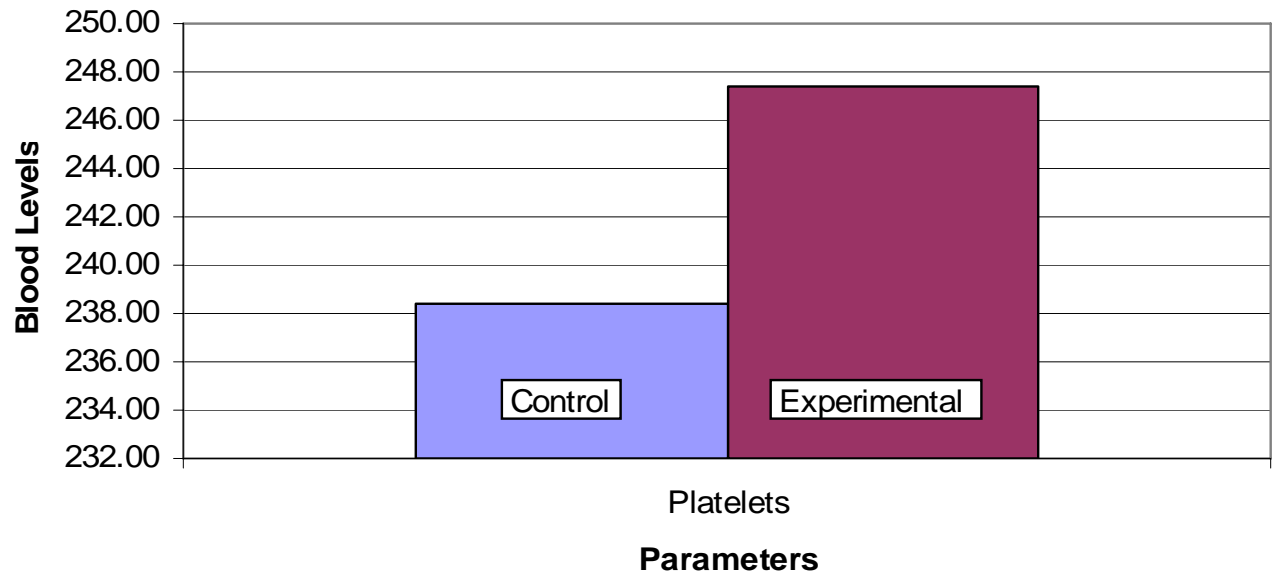
Hemaglobin



Hematocrit



Platelets



ABOUT SIBR RESEARCH

SIBR RESEARCH IS A CONTRACT RESEARCH ORGANIZATION ESTABLISHED TO DEVELOP AND IMPLEMENT CLINICAL TRIALS. SIBR RESEARCH IS DEDICATED TO PROVIDING QUALITY CLINICAL TRIALS TO THE NUTRACEUTICAL, PHARMACEUTICAL, AND MEDICAL DEVICE INDUSTRIES. SIBR RESEARCH WAS FOUNDED IN 1995 BY DR. WILLIAM V. JUDY

WILLIAM V. JUDY, PhD

DR JUDY RECEIVED HIS PH.D. FROM WEST VIRGINIA UNIVERSITY MEDICAL CENTER IN 1971. HIS TRAINING AND WORK HAVE BEEN IN CENTRAL AND PERIPHERAL NERVOUS SYSTEMS AND CONTROL MECHANISMS IN BIOENERGETICS, TEMPERATURE REGULATION, AND CARDIOVASCULAR FUNCTION. HE SERVED AS AN AEROSPACE SCIENTIST WITH NASA AND CONDUCTED IN-FLIGHT CARDIOVASCULAR AND THERMAL EXPERIEMENTS. HE SERVED AS A PROFESSOR AT IU SCHOOL OF MEDICINE. HE HAS WAS ACTIVELY INVOLVED IN CLINICAL RESEARCH TRIALS AT METHODIST AND ST. VINCENT HOSPITALS IN INDIANAPOLIS AND SARASOTA MEMORIAL HOSPITAL IN SARASOTA, FLORIDA. HE IS AN AUTHOR AND WORLDS RENOWNED LECTURER.

WILLIS W. STOGSDILL, MD

DR STOGSDILL JOINED SIBR RESEARCH AT ITS INCEPTION IN 1995 SERVING AS MEDICAL DIRECTOR. HE RECEIVED HIS M.D. FROM IU SCHOOL OF MEDICINE. HE WAS CHAIRMAN OF THE ST. VINCENT DEPARTMENT OF ANESTHESIA FOR TWENTY-TWO YEARS. WHILE THERE HE SERVED AS THE DIRECTOR OF THE RESPIRATORY THERAPY DEPARTMENT AND CHAIRMAN OF THE INTENSIVE CARE COMMITTEE. HE WAS INSTRUMENTAL IN DEVELOPING ONE OF THE MOST SUCCESSFUL CARDIOVASCULAR AND ANESTHESIA PROGRAMS IN THE UNITED STATES. FOLLOWING THE ESTABLISHMENT OF THESE PROGRAMS, HE LIMITED HIS PRACTICE TO CARDIOVASCULAR ANESTHESIA. HE DID RESEARCH IN NONINVASIVE CARDIOVASCULAR MONITORING AND RESEARCH ON THE USE OF CO_Q₁₀ TO PRESERVE AND ENHANCE CARDIAC FUNCTION DURING THE FOLLOIWNIG CARDIAC SURGERY AND ANESTHESIA. HE CONTINUES TO BE ACTIVELY INVOLVED IN RESEARCH FOR THE NUTRACEUTICAL INDUSTRY.

SIBR RESEARCH, INC.
4112 20TH STREET WEST,
BRADENTON, FL 34205

COPYRIGHT 2005, SIBR RESEARCH, INC.