

## **Blood Chemistry Evaluation-** Cass Ingram, DO

The blood chemistry ranges given in nursing school are based on a “no-so-healthy” population. Here are the blood chemistry ranges recommended by Dr. Cass Ingram, world renown Osteopath and founder of North American Herb & Spice Company.

### **Glucose Ideal Range: 75-105**

The glucose found in the blood is not merely from the sugar we eat, that is the juice, grapes, ice cream, and doughnuts. It is partially a synthetic product of cellular metabolism. This is because glucose is produced through enzymatic reactions from a variety of substrate, including dietary starch and protein. However, dietary carbohydrate, particularly refined sugar, exerts the most potent influence upon glucose levels. Normally blood glucose levels are maintained within a narrow range. This is accomplished via the influence of a variety of hormones including thyroxine, insulin, glucagons, and glucocorticoids.

### **Triglycerides: Ideal Range: 6-150**

### **Cholesterol Ideal Range: 165-195**

### **HDL Ideal Range: 50-70**

High-density lipoprotein is a protein molecule which transports lipids in the bloodstream, notably triglycerides and cholesterol. It is synthesized primarily in the liver.

### **LDL: 90-140**

Low-density lipoprotein molecule which functions to transport fatty acids, particularly triglycerides, within the bloodstream. It is synthesized in the liver.

### **Creatinine Ideal Range: 0.8-1.2**

This is traditionally used as a marker for kidney function. The kidneys are responsible for removing creatinine from the blood, and its accumulation signifies kidney failure. Creatinine is a breakdown product of a protein found in muscle, i.e. creatinine phosphate. The latter is important for energy production in muscle, including the heart. Because it is a derivative of this crucial energy compound, creatinine may also serve as a marker of protein metabolism in muscular tissues.

### **BUN Ideal Range: 10-22**

Blood Urea Nitrogen. It is an indirect measure of the rate of protein synthesis and degradation. Urea is formed primarily in the liver as a result of protein catabolism. It is produced as a result of an enzymatic reaction designed to detoxify ammonia, which is itself an end product of protein metabolism. Normally, urea is excreted almost entirely by the kidneys, and thus its levels are relied upon as a warning sign of kidney failure.

### **BUN/Creatinine Ratio Ideal Range: 13-16**

**Uric Acid Ideal Range: 4.2-7.0**

**Bilirubin, Total Ideal Range: 0.2-1.0**

**Alkaline Phosphatase Ideal Range: 60-110**

**SGO Ideal Range: 12-35**

This enzyme serves a marker for liver damage. It is involved in protein synthesis within the hepatocytes.

**SGPT Ideal Range: 14-40**

Yet another enzyme marker for liver damage. This enzyme is also involved in protein synthesis, and its activity is dependent upon vitamin B6.

**GGPT Ideal Range: 5-30**

**CO2 Ideal Range: 23-28**

Carbon dioxide levels serve as a reflection of tissue hydrogen ion content. In this respect, these levels are an indirect representation of bicarbonate levels (HCO<sub>3</sub>). CO<sub>2</sub> levels also reveal evidence of lung, renal, and pancreatic disease.

**Chloride Ideal Range: 100-107**

**Sodium Ideal Range: 140-145**

Sodium is the primary extra cellular electrolyte. Along with chloride, it accounts for some 90% of blood osmolality. This is the primary substance controlling the distribution of water within the tissues and its levels are a revelation of the osmotic state of the blood. The maintenance of serum sodium levels is ultimately a function of the adrenal glands. This is because the adrenal glands produce aldosterone a hormone which exerts potent control over sodium absorption, retention, and excretion. The fact is the role of the kidneys in controlling sodium metabolism is minor, because aldosterone commands the entire process through its direct effects upon the kidney tubules.

**Potassium Ideal Range: 4.0-5.0**

**Phosphorus Ideal Range: 3.2-4.0**

**Calcium Ideal Range: 9.0-9.9**

**Albumin Ideal Range: 4.0-5.0**

**Globulin Ideal Range: 2.4-3.0**

**WBC Ideal Range: 6.5-8.5**

**RBC Ideal Range, male: 4.2-5.6; female: 4.0-5.0**

**Platelet Count Ideal Range: 275,000 to 425,000 per cu. mm**

**HCT Ideal Range, male: 40.0-50.0; female: 38.0-46.0**

**HMG Ideal Range, men: 14.0-17.0; women: 13.5-16.0**

**MCV Ideal Range: 82-91**

**Eosinophils Ideal Range: less than 3%**

**Lymphocytes Ideal Range: 15-39%**

**Neutrophils Ideal Range: 40-70%**

**Monocytes Ideal Range: 3-7%**