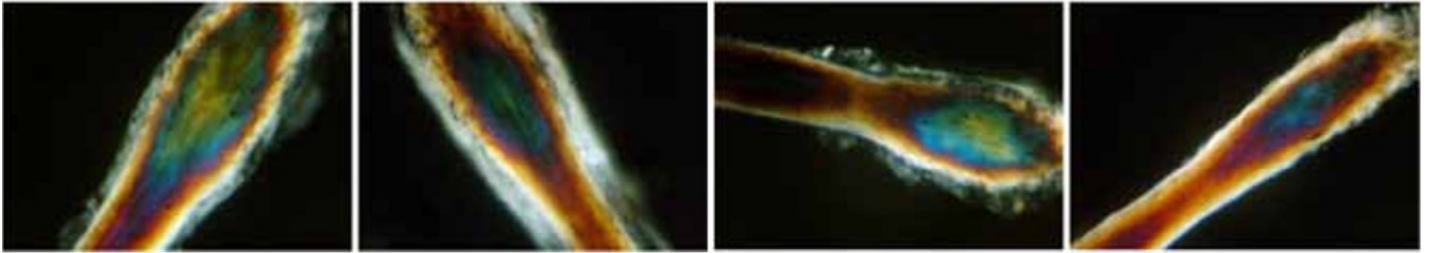


BIOCHEMICAL COMPONENTS CHECK© (BCC©) HAIR-BULB ANALYSIS



Sample ID: 207
Doctor: George Georgiou
Birthdate: 1944-05-27
Age: 67
Sex: Male
Date: 2012-01-19

SAMPLE ONLY

For the analysis of the hair bulb, Microscope Spectroscopy is used, combined with sophisticated software to determine the biochemical components of cellular processes. The hair shaft and the inner root sheath are localized in the bulb where they contain a blood capillary loop supplying nutrients - it is these circulating nutrients that are detected by the BCC test. During the growth phase of the hair, metabolic activity is greatly increased, exposing the hair to the internal metabolic environment; extracellular fluids, circulating blood and lymph. The BCC indicates the presence of minerals, vitamins, amino acids and hormones in the micro-architecture of the hair and gives precise indications on the cell's nutritive and dynamic aspects. It further highlights the levels of toxic metals and any mineral imbalances, allowing metabolic dysfunctions to be detected before symptoms manifest themselves. The data obtained corresponds to the current metabolic state. The BCC can be considered as a predictive test for future pathologies. Therefore, suitable dietary, nutritional, supplement and therapeutic strategies can be elaborated and personalized to each patient, based on their biochemical profile. The BCC analysis is a screening test and does not provide a diagnosis of present diseases or pathologies. The evaluation, interpretation and use of the analysis results must be referred exclusively to a doctor or health professional. This data is invaluable as it can quickly determine abnormalities in biochemical pathways which can easily be corrected to optimize health and be used as anti-aging preventatively.

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TOXIC OR HEAVY METALS

Heavy metals become toxic when they are not metabolized by the body and accumulate in the soft tissues. Heavy metals may enter the human body through food, water, air or absorption through the skin when they come in contact with humans in agriculture and in manufacturing, pharmaceutical, industrial, or residential settings. Industrial exposure accounts for a common route of exposure for adults.

Toxic Elements	Symbols	Reference Range	Result / Unit	low	high
Lead	Pb	0.06 - 1.7	1.0715		
Arsenic	As	0.02 - 0.09	0.0424		
Mercury	Hg	0.03 - 0.145	0.1095		
Nickel	Ni	0.07 - 0.42	0.3211		
Silver	Ag	0 - 0.15	0.0319		
Cadmium	Cd	0.08 - 0.5	0.3284		
Barium	Ba	0.16 - 0.75	0.4003		
Gold	Au	0 - 0.1	0.0318		
Aluminium	Al	0.9 - 3.4	3.1852		
Uranium	U	0.001 - 0.075	0.0337		
Tin	Sn	0.06 - 0.2	0.1051		

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Notes on toxic element profile:

Aluminium

High levels of Aluminium in hair are almost always associated with a disorder of the Calcium-Magnesium metabolism. An excess of this metal lowers Acetylcholinesterase enzyme (AChE) activity and also lowers the level of Ribonucleic acid (RNA). This deficiency leads to increased protein synthesis, which provokes the formation of inactive filaments inside Neurons.

Targeted organs: the Gastrointestinal System, the Skin, the Nervous System, Kidneys and Liver.

Arsenic

High levels of Arsenic in hair are a reliable indicator of arsenic toxicity in body tissues. Chronic poisoning leads to loss of appetite, weight loss, gastrointestinal disorders, peripheral neuritis, conjunctivitis and alterations to the skin, such as Hyperkeratosis and Melanosis. The latter disorder, which leads to a dark colouration of the skin, is characteristic of long-term exposure to Arsenic and can be a factor in increased risk of skin cancer. The absence of mutagenic effects of Arsenobetaine has been proven in tests.

Targeted Organs: Capillaries, the Gastrointestinal System, the Skin, the Nervous System and the Kidneys.

Barium

High levels of Barium in the hair are almost always associated with a reciprocal accumulation of Calcium and are an indication of under-functioning parathyroid gland.

Targeted Organs: the Lymphatic System, the Circulatory System, Heart and Bones.

Cadmium

High levels of Cadmium in hair are a reliable indicator of toxic overload in tissues and organs. Chronic exposure to cadmium can lead to respiratory and kidney problems, as well as cancer.

Targeted Organs: Kidneys, Hypothalamus, Lungs, Liver, Arteries and Olfactory Lobe.

Mercury

High levels of Mercury in hair is a reliable indicator of toxicity in tissues and organs. Mercury can damage the nervous system, kidneys and reproductive systems.

Targeted Organs: the nervous system, Kidneys, Mucus Membranes and Urinary Tract.

Nickel

Symptoms of nickel toxicity include nausea, dizziness, diarrhea, headache, vomiting, chest pain, weakness, coughing, brain and liver swelling, liver degeneration, skin rash, respiratory illness, thyroid malfunction. Nickel is essential for the absorption of Iron and Cobalt.

Targeted organs: Liver and Kidneys.

SAMPLE ONLY

Lead

Lead toxicity can cause neurological, behavioural, GI-tract and urinary tract problems.

Targeted organs: the Gastrointestinal system, the Skin, the Nervous System and Kidneys.

MINERAL NUTRIENT PROFILE

Minerals are simple-structured substances that play major roles in many metabolic functions. Many minerals are components of enzymes, which are catalysts of chemical reactions in the body. Additionally, minerals regulate and control the normal function of human and animal tissues, muscles, and organs. For example, sodium and potassium play a vital role in maintaining proper fluid balance. Calcium acts as a major structural component of bones and teeth. Iron carries oxygen throughout the body in blood and so forth. Deficiencies in minerals can often lead to many metabolic imbalances and dis-ease manifested in many symptoms that are often difficult to diagnose.

Minerals	Symbols	Reference Range	Result / Unit	low	high
Calcium	Ca	27 - 98	101.654		
Magnesium	Mg	4.9 - 18	17.4766		
Sodium	Na	4.5 - 32	9.6488		
Potassium	K	5.2 - 37	29.4657		
Zinc	Zn	7 - 23	10.3677		
Copper	Cu	2.3 - 19	9.9894		
Manganese	Mn	0.09 - 0.67	0.5852		
Iodine	I	0.25 - 2.6	0.7549		
Molybdenum	Mo	0.03 - 0.24	0.1413		
Lithium	Li	0.001 - 0.035	0.0527		
Chromium	Cr	0.01 - 0.07	0.0216		
Strontium	Sr	0.5 - 2.1	1.3514		
Selenium	Se	1.5 - 4.3	2.5633		
Phosphorus	P	3.7 - 11.4	5.3574		
Silicon	Si	1.7 - 5.2	5.4156		
Vanadium	V	0.12 - 0.31	0.3017		
Fluorine	F	4 - 9	5.2126		
Iron	Fe	1.3 - 3.4	2.6966		
Cobalt	Co	0.013 - 0.3	0.2423		
Sulfur	S	28.4 - 52400	28378.9		

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VITAMIN NUTRIENT PROFILE

Vitamins are substances that your body needs to grow and develop normally. There are 13 Vitamins that are essential - Vitamins A, C, D, E, K and the B Vitamins (Thiamine, Riboflavin, Niacin, Pantothenic Acid, Biotin, Vitamin B-6, Vitamin B-12 and Folate). Deficiencies in essential Vitamins can lead to symptoms and disease. Vitamins have diverse biochemical functions. Some have hormone-like functions as regulators of Mineral Metabolism (e.g., Vitamin D), or regulators of cell and tissue growth and differentiation (e.g., some forms of Vitamin A). Others function as antioxidants (e.g., Vitamin E and sometimes Vitamin C). The largest numbers of vitamins (e.g., B complex Vitamins) function as precursors for enzyme cofactors, that help enzymes in their work as catalysts of metabolism.

Vitamin	Symbols	Reference Range	Result / Unit	low	high
Ascorbic Acid - Vit. C	C	0.4 - 2.9	1.9957		
Biotin - Vitamin B7	B7	3.7 - 6.5	3.3597		
Cholecalciferol-Vit. D3	D3	4 - 9.5	6.778		
Cobalamins - Vit. B12	B12	0.25 - 2.1	0.9642		
Folic Acid - Vitamin B9	B9	1.1 - 7.5	5.9558		
Niacin - Vitamin B3	B3	1.2 - 4.2	2.7054		
Pantothenic - Vit. B5	B5	0.9 - 3.9	1.4394		
Phylloquinone - Vit. K1	K1	0.3 - 1.8	0.7153		
Pyridoxine - Vit. B6	B6	2.5 - 5.5	4.6126		
Retinol - Vitamin A	A	7.1 - 18.5	11.7817		
Riboflavin - Vitamin B2	B2	1 - 3.8	3.2913		
Thiamine - Vitamin B1	B1	0.8 - 2.9	1.2771		
Tocopherol - Vitamin E	E	0.8 - 3.2	1.4461		

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AMINO ACIDS

Amino Acids are the "building blocks" of the body. When Protein is broken down by digestion the result is 22 known Amino Acids. Eight are essential (cannot be manufactured by the body and must be obtained from food). The remaining are non-essential (can be manufactured by the body with proper nutrition). Amino acids are required for building cells and repairing tissue, forming antibodies to combat invading bacteria & viruses; building enzymes and hormones, as well as nucleoproteins (RNA & DNA). They also help to carry oxygen throughout the body, and are part of all muscular activity.

Amino Acids	Symbols	Reference Range	Result / Unit	low	high
Alanine	Ala	0.4 - 2.2	1.3477		
Arginine	Arg	2.5 - 5.3	3.8373		
Aspartic acid	Asp	0.8 - 4.4	1.9242		
Cysteine	Cys	4 - 15.3	5.4755		
Glutamic acid	Glu	7.3 - 15	10.5894		
Glycine	Gly	1.2 - 4.5	1.8987		
Histidine	His	1.5 - 5.5	3.5246		
Isoleucine	Ile	0.9 - 3.1	2.1567		
Leucine	Leu	1.7 - 4.3	3.9841		
Lysine	Lys	0.5 - 2	1.2011		
Methionine	Met	1 - 2.9	2.1024		
Phenylalanine	Phe	0.55 - 2.5	1.3535		
Proline	Pro	2.2 - 6.1	2.0387		
Serine	Ser	3.9 - 8.3	3.9942		
Taurine	Tau	1.4 - 3.1	2.3363		
Threonine	Thr	1.5 - 4.7	3.5869		
Tryptophan	Trp	1.6 - 3.9	2.7122		
Tyrosine	Try	1.1 - 2.9	1.985		
Valine	Val	3 - 7.1	6.3378		

Essential amino acids are: Histidine, Isoleucine, Lysine, Methionine, Phenylalanine, Threonine, Tryptophan and Valine.
Non-essential amino acids are: Alanine, Arginine, Aspartic Acid, Cysteine, Glutamic acid, Glycine, Proline, Serine and Tyrosine.

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HORMONE PROFILE

Hormones are your body's chemical messengers. They travel in the bloodstream to tissues or organs. They work slowly, over time, and affect many different processes, including:

- Growth and Development
- Metabolism - how your body gets energy from the foods you eat
- Sexual function
- Reproduction
- Mood

Endocrine glands, which are special groups of cells, make hormones. The major endocrine glands are the pituitary, pineal, thymus, thyroid, adrenal glands and pancreas. In addition, men produce hormones in their testes and women produce them in their ovaries.

Hormones	Symbols	Reference Range	Result / Unit	low	high
Serotonin	Se	7.9 - 16	11.5277		
Dopamine	Do	0 - 8	2.3519		
Oxytocin	Oxt	10.05 - 67	29.899		
Progesterone	Pr	0.2 - 15	0.7983		
Estrogens	Es	0.5 - 50	1.6475		
Noradrenaline	No	0 - 0.6	0.5716		
Testosterone	Te	0.7 - 11.8	9.907		

SAMPLE ONLY

BCC® test reflects the level of intra-tissue hormones.

The results are reliable, but do not necessarily correlate with circulating blood levels of hormones.

TENDENCY ELABORATION

Please note that the data from this report should not be considered as diagnostic.

The table below is a summary of the possible health tendencies, based upon scientific studies.

By analyzing the mineral ratios and relationships, information can be derived about organ and gland function, mental and emotional tendencies, how the body is responding to stress and how to support the body nutritionally. Many disease 'trends' can also be identified, making hair analysis an excellent and cost-effective preventive and predictive tool. This data has been extensively reported in the literature by scientists such as Drs. Eck, Wilson and Watts. There is no contraindication to using other clinical tests as their interpretation will be different and can supply other useful health information.

Toxic Ratios	Min	Result / Unit	low	high
Calcium/Cadmium	2000:1	309.5:1		
Calcium/Lead	80:1	94.87:1		
Copper/Cadmium	125:1	30.41:1		
Copper/Lead	5:1	9.32:1		
Iron/Cadmium	175:1	8.21:1		
Iron/Lead	7:1	2.52:1		
Magnesium/Cadmium	300:1	53.21:1		
Magnesium/Lead	12:1	16.31:1		
Manganese/Cadmium	10:1	1.78:1		
Manganese/Lead	0.4:1	0.55:1		
Selenium/Mercury	11.3:1	23.41:1		
Sodium/Cadmium	1250:1	29.38:1		
Sodium/Lead	50:1	9.01:1		
Zinc/Cadmium	1000:1	31.57:1		
Zinc/Lead	40:1	9.68:1		

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Ratios	Reference Range	Result / Unit	low	high
Calcium/Magnesium	3.3:1 - 15.5:1	17.86:1		
Calcium/Phosphorus	2.2:1 - 25.3:1	41.8:1		
Calcium/Potassium	2:1 - 22:1	31.98:1		
Calcium/Sodium	0.95:1 - 24.7:1	66.45:1		
Calcium/Zinc	1.5:1 - 32.5:1	56.01:1		
Chromium/Vanadium	0.04:1 - 1.12:1	1.18:1		
Iron/Copper	1.2:1 - 5.2:1	9.06:1		
Sodium/Magnesium	2.7:1 - 9.7:1	6.51:1		
Sodium/Potassium	1.2:1 - 12:1	15.65:1		
Zinc/Copper	2.5:1 - 16:1	2.54:1		
Zinc/Iron	3.2:1 - 10:1	2.29:1		

SAMPLE ONLY

TENDENCY ELABORATION

*** Sodium/Magnesium (Adrenal Functioning)

This ratio is a reflection of the functional state of the adrenal glands, Mineralocorticoids (Aldosterone) and Glucocorticoids (Cortisol) balance, oxidation level and energetic efficiency. The right balance between Mineralocorticoids and Glucocorticoids (see also Sodium/Potassium ratio) is very important for general wellness. The Oxidation level in the hair analysis is the sum of the Thyroid (Calcium/Potassium) and Adrenal (Sodium/Magnesium) ratios. When this ratio is lower than 1,1 or higher than 19,0, an intracellular accumulation of free radicals and/or nitrogen degradation products is probably present.

*** Sodium/Potassium (Adrenal Functioning)

This ratio reflects the status of the adrenal cortex. Low percentiles are an indication of adrenal exhaustion that can lead to chronic disease and infection. High percentiles are an indication of adrenal imbalance that can lead to inflammation and allergies.

*** Zinc/Copper (Copper deficiency or toxicity)

This ratio is a reflection of the functional state of female Hormones, functionality of the Immune System, and Cholesterol and Lipid Metabolism.

*** Zinc/Iron (Immune system imbalance and protein synthesis)

This ratio can be an indication of a weak immune system and problems with protein synthesis. Zinc is fundamental to the functionality and lifespan of over one hundred Enzymes, and play a central role in the cell reproduction.

*** Iron/Copper (Infection/Inflammation indicator)

Imbalances in the Iron/Copper ratio reflects a tendency to viral, bacterial or fungal infection and the possible inflammation with accompanying Anaemia.

*** Calcium/Magnesium (Glucose Metabolism)

This ratio reflects glucose metabolism. A low or a high percentile can be an indication of hypoglycaemia, insulin insensitivity and diabetes.

*** Calcium/Potassium (Thyroid Indicator)

This ratio is an indication of thyroid functioning. A low percentile is probably related to excessive thyroid activity and a high percentile to very low thyroid activity.

*** Calcium/Phosphorus (Oxidative Metabolism)

This ratio is a reflection of the autonomic state of the body. A low percentile will be an indicator of a sympathetic state, whereas a high percentile will be a parasympathetic state.

*** Calcium/Sodium (Blood pressure)

This ratio is a reflection of a hypotensive or hypertensive tendency. Low percentiles will be an indication of hypertension and high percentiles an indication of a hypotensive tendency.

*** Calcium/Zinc (Adrenal cortex - Hypothalamic Function)

The Calcium/Zinc ration is a reflection of Adrenal Cortex Hypothalamic function which controls Lipid and Glucose Metabolism.

*** Chromium/Vanadium (Insulin Sensitivity)

This is a reflection of insulin metabolism. Imbalance in this ratio can indicate Insulin resistance or Glucose intolerance. Chromium and Vanadium represent extracellular and intracellular insulin receptors respectively.

This data is a reflection of the metabolically active areas of the Hair Bulb and is an indication of the current Metabolic activity of the intracellular tissues. The Hair Bulb is not washed or treated in any way in order to reflect the true Metabolic activity.

Please note that the BCC is not a diagnostic test but one that can identify potential causative factors and current intracellular metabolic activity.

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