

# HAIR ELEMENTS



**PATIENT: No 12**  
**SEX: Male**  
**AGE: 31**  
**Location, Cape Town**

POTENTIALLY TOXIC ELEMENTS				
TOXIC ELEMENTS	RESULT $\mu\text{g/g}$	REFERENCE RANGE	PERCENTILE	
			68 <sup>th</sup>	95 <sup>th</sup>
Aluminum	8.0	< 7.0		
Antimony	0.035	< 0.066		
Arsenic	0.031	< 0.080		
Beryllium	< 0.01	< 0.020		
Bismuth	< 0.002	< 0.060		
Cadmium	0.057	< 0.15		
Lead	0.17	< 2.0		
Mercury	0.96	< 1.1		
Platinum	< 0.003	< 0.005		
Thallium	< 0.001	< 0.010		
Thorium	< 0.001	< 0.005		
Uranium	0.002	< 0.060		
Nickel	0.20	< 0.40		
Silver	0.04	< 0.12		
Tin	0.04	< 0.30		
Titanium	0.68	< 1.0		
Total Toxic Representation				

ESSENTIAL AND OTHER ELEMENTS							
ELEMENTS	RESULT $\mu\text{g/g}$	REFERENCE RANGE	PERCENTILE				
			2.5 <sup>th</sup>	16 <sup>th</sup>	50 <sup>th</sup>	84 <sup>th</sup>	97.5 <sup>th</sup>
Calcium	387	200- 750					
Magnesium	56	25- 75					
Sodium	31	12- 90					
Potassium	14	9- 40					
Copper	9.4	10- 28					
Zinc	170	130- 200					
Manganese	0.15	0.15- 0.65					
Chromium	0.38	0.20- 0.40					
Vanadium	0.022	0.018- 0.065					
Molybdenum	0.041	0.025- 0.064					
Boron	1.6	0.40- 3.0					
Iodine	0.55	0.25- 1.3					
Lithium	0.005	0.007- 0.023					
Phosphorus	247	160- 250					
Selenium	0.88	0.95- 1.7					
Strontium	0.25	0.30- 3.5					
Sulfur	47700	44500- 52000					
Barium	0.06	0.16- 1.6					
Cobalt	0.005	0.013- 0.035					
Iron	16	5.4- 13					
Germanium	0.034	0.045- 0.065					
Rubidium	0.014	0.011- 0.12					
Zirconium	0.077	0.020- 0.44					

SPECIMEN DATA				RATIOS		
<b>COMMENTS:</b>				<b>ELEMENTS</b>	<b>RATIOS</b>	<b>EXPECTED RANGE</b>
Date Collected:	Sample Size:	0.197 g	Ca/Mg	6.91	4- 30	
Date Received: 9/7/2006	Sample Type:	Head	Ca/P	1.57	0.8- 8	
Date Completed: 9/14/2006	Hair Color:	Brown	Na/K	2.21	0.5- 10	
	Treatment:		Zn/Cu	18.1	4- 20	
Methodology: ICP-MS	Shampoo:		Zn/Cd	> 999	> 800	

V06.99

# HAIR ELEMENTS



**PATIENT: Number 12a**  
**SEX: Male**  
**AGE: 32**  
**Location: Cape Town, RSA**

## POTENTIALLY TOXIC ELEMENTS

TOXIC ELEMENTS	RESULT $\mu\text{g/g}$	REFERENCE RANGE	PERCENTILE	
			68 <sup>th</sup>	95 <sup>th</sup>
Aluminum	12	< 7.0		
Antimony	0.060	< 0.066		
Arsenic	0.070	< 0.080		
Beryllium	< 0.01	< 0.020		
Bismuth	0.031	< 2.0		
Cadmium	0.021	< 0.15		
Lead	0.54	< 2.0		
Mercury	2.4	< 1.1		
Platinum	< 0.003	< 0.005		
Thallium	< 0.001	< 0.010		
Thorium	0.001	< 0.005		
Uranium	0.006	< 0.060		
Nickel	0.08	< 0.40		
Silver	0.03	< 0.12		
Tin	0.07	< 0.30		
Titanium	0.64	< 1.0		
Total Toxic Representation				

## ESSENTIAL AND OTHER ELEMENTS

ELEMENTS	RESULT $\mu\text{g/g}$	REFERENCE RANGE	PERCENTILE				
			2.5 <sup>th</sup>	16 <sup>th</sup>	50 <sup>th</sup>	84 <sup>th</sup>	97.5 <sup>th</sup>
Calcium	505	200- 750					
Magnesium	59	25- 75					
Sodium	22	12- 90					
Potassium	12	9- 40					
Copper	9.5	10- 28					
Zinc	170	130- 200					
Manganese	0.21	0.15- 0.65					
Chromium	0.45	0.20- 0.40					
Vanadium	0.070	0.018- 0.065					
Molybdenum	0.029	0.025- 0.064					
Boron	0.37	0.40- 3.0					
Iodine	1.5	0.25- 1.3					
Lithium	0.008	0.007- 0.023					
Phosphorus	188	160- 250					
Selenium	1.1	0.95- 1.7					
Strontium	0.67	0.30- 3.5					
Sulfur	48900	44500- 52000					
Barium	0.25	0.16- 1.6					
Cobalt	0.007	0.013- 0.035					
Iron	18	5.4- 13					
Germanium	0.027	0.045- 0.065					
Rubidium	0.015	0.011- 0.12					
Zirconium	0.090	0.020- 0.44					

### SPECIMEN DATA

**COMMENTS:**  
 Date Collected: 7/31/2007      Sample Size: 0.201 g  
 Date Received: 9/13/2007      Sample Type: Head  
 Date Completed: 9/18/2007      Hair Color: Brown  
    Treatment:  
 Methodology: ICP-MS              Shampoo: Borax

### RATIOS

ELEMENTS	RATIOS	EXPECTED RANGE
Ca/Mg	8.56	4- 30
Ca/P	2.69	0.8- 8
Na/K	1.83	0.5- 10
Zn/Cu	17.9	4- 20
Zn/Cd	> 999	> 800

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# HAIR ELEMENTS



**PATIENT:** Number 12b  
**SEX:** Male  
**AGE:** 33  
**LOCATION:** Cape Town, RSA

## POTENTIALLY TOXIC ELEMENTS

TOXIC ELEMENTS	RESULT $\mu\text{g/g}$	REFERENCE RANGE	PERCENTILE	
			68 <sup>th</sup>	95 <sup>th</sup>
Aluminum	3.8	< 7.0		
Antimony	0.078	< 0.066		
Arsenic	0.055	< 0.080		
Beryllium	< 0.01	< 0.020		
Bismuth	0.023	< 2.0		
Cadmium	0.050	< 0.15		
Lead	0.29	< 2.0		
Mercury	0.63	< 1.1		
Platinum	< 0.003	< 0.005		
Thallium	< 0.001	< 0.010		
Thorium	0.001	< 0.005		
Uranium	0.024	< 0.060		
Nickel	0.25	< 0.40		
Silver	0.03	< 0.12		
Tin	0.10	< 0.30		
Titanium	0.43	< 1.0		
Total Toxic Representation				

## ESSENTIAL AND OTHER ELEMENTS

ELEMENTS	RESULT $\mu\text{g/g}$	REFERENCE RANGE	PERCENTILE				
			2.5 <sup>th</sup>	16 <sup>th</sup>	50 <sup>th</sup>	84 <sup>th</sup>	97.5 <sup>th</sup>
Calcium	376	200- 750					
Magnesium	40	25- 75					
Sodium	89	12- 90					
Potassium	34	9- 40					
Copper	8.8	10- 28					
Zinc	170	130- 200					
Manganese	0.09	0.15- 0.65					
Chromium	0.41	0.20- 0.40					
Vanadium	0.045	0.018- 0.065					
Molybdenum	0.031	0.025- 0.064					
Boron	1.0	0.40- 3.0					
Iodine	1.1	0.25- 1.3					
Lithium	< 0.004	0.007- 0.023					
Phosphorus	186	160- 250					
Selenium	0.81	0.95- 1.7					
Strontium	0.36	0.30- 3.5					
Sulfur	49000	44500- 52000					
Barium	0.15	0.16- 1.6					
Cobalt	0.004	0.013- 0.035					
Iron	13	5.4- 13					
Germanium	0.027	0.045- 0.065					
Rubidium	0.037	0.011- 0.12					
Zirconium	0.082	0.020- 0.44					

### SPECIMEN DATA

**COMMENTS:**

Date Collected: 5/30/2008      Sample Size: 0.203 g  
 Date Received: 7/2/2008      Sample Type: Head  
 Date Completed: 7/3/2008      Hair Color: Brown  
 Treatment:  
 Methodology: ICP-MS      Shampoo:

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### RATIOS

ELEMENTS	RATIOS	EXPECTED RANGE
Ca/Mg	9.4	4- 30
Ca/P	2.02	0.8- 8
Na/K	2.62	0.5- 10
Zn/Cu	19.3	4- 20
Zn/Cd	> 999	> 800