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Advancing the Science of Wellness
Rocky Mountain Analytical

Date of Collection: 24-Sep-2013
Sample Received: 25-Sep-2013
Reported Date: 26-Nov-2013
Sample Type: Urine

Iodine Plus — Accession Number: 333333

Healthcare Professional:

Phone:
Fax:

Patient:
Jane Smith

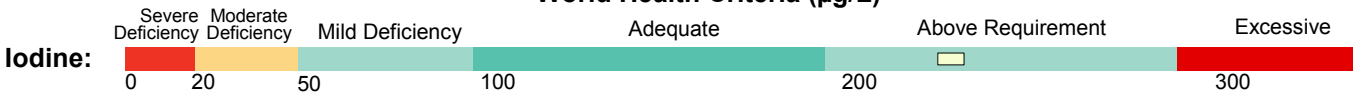
Gender : F
Date of Birth : 01-Oct-1978
Age: 44

Relevant Medications	Last Used

Biometrics

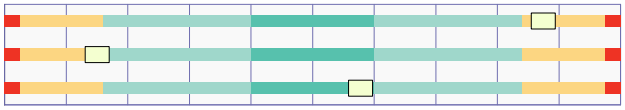
Height (in) : 63
Weight (lb) : 132
Waist (in) : 34
Hip (in) : 40

World Health Criteria (µg/L)



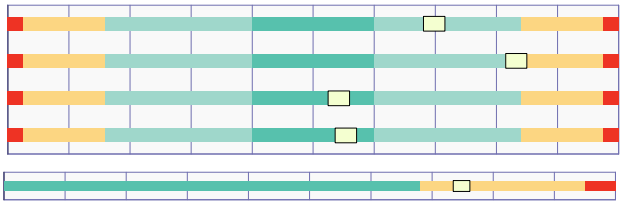
Raw Concentration (µg/L)

Analyte	Result	Range	Percentile	Range Applied
Iodine AM	230	48 - 210	87%	Iodine ug/L (AM)
Br / I AM	7.0	7.1 - 29	15%	Br/ Iodine (AM)
Bromine AM	1,600	840 - 2,400	58%	Br ug/L (AM)



Creatinine Normalized (µg/g creatinine)

Analyte	Result	Range	Percentile	Range Applied
Selenium AM	0.091	0.047 - 0.12	70%	Se/Cr F >= 12 yrs
Iodine AM	220	42 - 230	83%	Iodine/Cr AM (Female)
Bromine AM	1,500	750 - 2,500	54%	Br/Cr AM (Female)
Creatinine AM	1.1	0.53 - 1.6	55%	Creatinine AM Female
Cadmium AM	0.56	0.49 - 1.1	75%	Cd/Cr F >= 12 yrs



The numbers listed for the Cadmium range represent the 68th and 95th percentiles, whereas the numbers listed for the other analytes represent the 16th and 84th percentiles.

WORLD HEALTH ORGANIZATION (WHO) RANGES FOR FIRST MORNING URINE IODINE
The ranges cited by the WHO are listed below. Urine iodine reflects recent iodine intake. A low result does not automatically mean that the individual is deficient in iodine, nor does a low result automatically mean that the individual needs to be supplemented with iodine. Urine iodine measurements do not automatically correlate with clinical evidence of thyroid problems.

Bear in mind that if a patient is consistently found to have very low iodine excretion (reflecting low intake) over an extended period of time, then it is not unreasonable to expect that the patient will eventually manifest signs and symptoms of iodine deficiency.

Men and Non-Pregnant Women
<20 ug/L: Severe deficiency
20-49 ug/L: Moderate deficiency
50-99 ug/L: Mild deficiency
100-199 ug/L: Adequate
200-299 ug/L: Above requirement
>= 300 ug/L: Excessive

Pregnant Women
<150 ug/L: Insufficient
150-249 ug/L: Sufficient

IODINE CONCENTRATION BETWEEN 200 and 299 ug/L
This patient's raw iodine concentration is 230 ug/L. According to the WHO standards, this is considered "Above Requirement". Technically those standards apply to first morning urine, but the results should still be roughly the same for 24 hour urine. As mentioned, this is a snapshot of recent iodine intake, but if iodine is this range is a consistent finding, it might be worthwhile to review the patient's diet and supplementation.

Signs and symptoms of chronic iodine excess can include altered taste, a metallic taste and nausea. Excess iodine can also trigger hypothyroidism and autoimmune thyroiditis.

If this is a 24 hour urine specimen, the high iodine result may reflect excessively concentrated urine.

BROMINE: BACKGROUND INFORMATION
Bromine is a nonessential chemical element, but is found in relatively large amounts in the food supply where it is a component of many pesticides and fumigants; bromine is also present in many pharmaceuticals and organic chemicals such as flame retardants, and is also used as a disinfectant in hot tubs. Potassium bromate is an additive in commercial baking flour. As a consequence, most individuals have a considerable body burden of bromine.

Bromine is quickly distributed throughout body tissues where it displaces chlorine. In the thyroid gland, it replaces iodine rather than chlorine. (Vobecky 1996) Bromine interferes with the uptake and utilization of iodine in some tissues, since it is similar in size and chemical reactivity, to iodine.

Data on elimination of bromine from the body are scanty, but urine is the principal route of excretion for iodine; urine contains relatively large amounts of bromine and due to its similarity to iodine, urine is also expected to be the principal excretion route for bromine.

Bromine accumulation may present with neurologic symptoms such as irritability, restlessness, weakness, and stupor. Other symptoms and signs include nausea, anorexia and skin rashes. Since it may displace iodine from binding sites, bromine excess may present with signs and symptoms of hypothyroidism. Pathological thyroid tissue including cold nodules has been shown to contain markedly high levels of bromine. (Malenchenko)There is also evidence that exposure to methyl bromide is associated with an increased risk of prostate cancer. (Budnik)

Budnik LT, Kloth S, Velasco-Garrido M, Baur X. Environ Health 2012;11:5. Prostate cancer and toxicity from critical use exemptions of methyl bromide:
environmental protection helps protect against human health risks.

Malenchenko AF, Demidchik EP, Tadeush VN. Med Radiol (Mosk)1984;29:19-22.[Content and distribution of iodine, chlorine and bromine in normal and
pathologically changed thyroid gland tissue].

Vobecký M, Babický A, Lener J, Svandová E. Biol Trace Elem Res 1996;54:207-212. Interaction of bromine with iodine in the rat thyroid gland at enhanced bromide intake.

RATIO: BROMINE/IODINE (Br/I)
There is some support for the notion that iodine "displaces" bromine. Data analysis at RMA indicates that bromine and iodine are positively correlated: higher bromine excretion is associated with higher iodine excretion. Abraham has also published research indicating that iodine supplementation increases bromine excretion. (Abraham GE. “Iodine supplementation markedly increases urinary excretion of fluoride and bromide.” Townsend Letter, 2003; 238:108-109).

The median "background" ratio, in persons who are not supplementing with iodine, is approximately 10 to 12. Here, the ratio is 7.0. Higher ratios might be expected in individuals supplementing with iodine but may also be seen when iodine excretion is markedly low.

Lower ratios, especially in the face of iodine supplementation, might indicate a lower body burden of bromine, but this needs to be confirmed by additional research.

George Gillson, MD PhD
Medical Director