

Strontium

Atomic number 38
Atomic weight 87.62

Collection

Serum/Plasma 2 mL Plastic tube. No anticoagulant
Urine 20 mL Sterile Universal

Reference ranges

			Reference
Serum/plasma	µmol/L	0.19-0.76	1
Blood	µmol/L	0.09-0.40	1
Urine	mg/L	0.35	2
	nmol/L	4.0	2
	nmol/24 h	4.7	3
	mmol/mol creatinine	0.49 95th percentile	2
	nmol/mmol creatinine	0.52 97.5 th percentile	3

References

1. Cesbron A, Saussereau E, Mahieu L, Couland I, Guerbet M, Goulle. J-P Metallic profile of whole blood and plasma in a series of 106 healthy volunteers. J. Anal Tox 2013; 37: 401-405.
2. Morton J, Leese E, Tan E, Cocker J. Determination of 61 elements in urine samples collected from a non-occupationally exposed UK adult population, Toxicol. Letters 2014; 231: 179-193.
3. Sieniawska CE, Jung LC, Olufadi R, Walker V, Twenty-four urinary trace element excretion:reference intervals and interpretive issues, Ann. Clin Biochem, 2012; 49: 341-51.

Sources:

Strontium has similar chemical properties to calcium and barium. It reacts vigorously with air and water and, therefore, always naturally occurs combined with other elements. It is found in rocks, soil, water and air.

The principle uses of strontium compounds are in pyrotechnics and as the carbonate in special glass for television screens and visual display units.

Strontium (as strontium ranelate) is licensed for the treatment of postmenopausal osteoporosis. It stimulates bone formation and reduces bone resorption. A potential problem is the interference of strontium with measurement of serum total calcium using conventional colorimetric assays used in routine laboratories. The magnitude of interference is about 0.25mmol/L, which would be significant if the patients' calcium levels were outside the reference range at the outset.

Strontium measurement may be of help in the forensic examination of cases of drowning. Concentrations are high in sea water and concentrations of strontium in serum and teeth

(dentine/enamel) might be additional proof for the diagnosis of sea water drowning.

Increased serum and bone concentrations are seen in patients with chronic renal failure

Toxicity:

Toxicity does not appear to be a significant problem. No adverse effects have been reported among subjects with occupational exposure to strontium.

Laboratory indices:

Blood is the matrix of choice. Serum strontium is occasionally used to check for compliance in patients prescribed strontium ranelate.

References:

1. Azparren J, de la Rosa I and Sancho M. Biventricular measurement of blood strontium in real cases of drowning. *Forensic Sci Int* 1994; **69**: 139-148.
2. Fortes, F, Perez-Carceles M, Sibon A, Luna A, Laserna J. Spatial distribution analysis of strontium in human teeth by laser-induced breakdown spectroscopy: application to diagnosis of seawater drowning. *International Journal of Legal Medicine*, 2015; 129: 807-813.
3. Marie PJ. Strontium as a therapy for osteoporosis. *Curr Opin Pharmacol*; 2005; 5: 633-636.
4. Schrooten I, Elseviers M, Lamberts L, De Broe M and D'Haese P. Increased serum strontium levels in dialysis patients: An epidemiological survey. *Kidney International* 1999; 56: 1886–1892