References

1. Muller M et al. Photometric determination of human serum bromide levels. Tox Lett 1999; 107: 155- 159
2. Allain P et al. Determination of iodine and bromine in plasma and urine by inductively coupled plasma mass spectrometry. Analyst 1990; 115: 813-815

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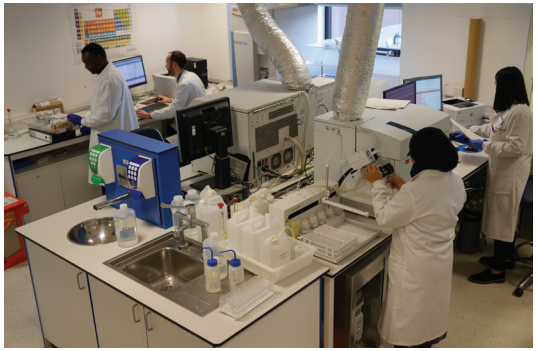
NHS
Black Country Pathology Services

Serum Bromide Service

Trace Elements Laboratory
Clinical Biochemistry



BCPS
NHS Pathology Serving the Black Country

Provided by Sandwell and West Birmingham NHS Trust, The Dudley Group NHS Foundation Trust, The Royal Wolverhampton NHS Trust and Walsall Healthcare NHS Trust.

Serum Bromide Service

Sample requirements

Minimum of 100 µl of serum (collected into a tube which contains no anti-coagulant)

- Samples should be spun and the serum aliquot only stored at 4°C prior to dispatch.
- Send samples by first class post at ambient temperature to the address on the back of this leaflet
- Gel/clot activator/or any anti-coagulant tubes NOT acceptable. Do NOT use tubes with black o-rings

Clinical Use

Bromide (Br) Bromide salts were previously widely used as sedatives and anti-epileptics. Newer drugs have now replaced most bromide therapy; however, bromide salts are still used to treat refractory seizures in children. Bromide is thought to exert its anti-epileptic effect by passing through neuronal chloride channels, hyperpolarising the neuronal membranes and consequently raising the seizure threshold.

Chronic bromide toxicity, also referred to as "bromism", may arise due to long-term ingestion of bromide salts. Bromism impairs neuronal transmission leading to neurological and psychiatric disturbances such as delirium, hallucinations, tremor and in severe cases, coma. Other manifestations include anorexia, constipation and skin rashes. Acute toxicity, although very rare, has been reported to cause nausea and vomiting, as well as significant nephrotoxicity and ototoxicity.

The risk of toxicity of bromide, can be difficult to predict due to considerable individual variation in the threshold for toxicity. Toxicity may be apparent at concentrations well below the therapeutic range.

Alkyl bromides such as methyl bromide also pose a serious risk to health and the environment. Although previously used widely as fumigates for insect, weed and rodent control, their use has now been banned in most parts of the world. Methyl bromide toxicity arises predominantly through inhalation of the colourless gas giving rise to numbness, tremors, weakness, dizziness, speech impairment, pulmonary oedema, and renal damage in severe cases. The alkonium radicals liberated by molecular fission are accountable for the toxicity rather than the inorganic bromide constituent. Quantitation of the bromide ions is useful in suspected or known exposure to alkyl bromides, since they are the only component of the molecule that is readily measurable. However, since bromide is being used as an indirect marker of exposure to methyl bromide, much lower levels of serum bromide indicate significant exposure compared with the case for inorganic bromide.

Analytical details and testing strategy

Bromide is measured in serum using Inductively Coupled Plasma Mass Spectrometry (ICP-MS).

We offer electronic reporting of results by PDF.

Reference Ranges

Serum Bromide	**(mmol/L)**
Unexposed individuals	< 0.1
Inorganic bromide (bromide salts for anticonvulsant therapy	10-25

Note, however, that there is considerable individual variation in threshold for toxicity.

Potentially toxic concentrations	> 15.6
Significant toxicity	> 35

Note: Individual responses may vary widely: toxic effects can be seen at concentrations well below those stated (occasionally as low as 5 mmol/L). Immediate action must be taken to prevent further increase in individuals with serum concentrations in excess of 35 mmol/L.

Organic bromide (alkyl bromides)	
Occupational Exposure Limit:	0.38

NOTE much lower toxic values if exposed to alkyl bromides versus inorganic bromide.

Turaround

We aim to analyse and report the results within 3 working days from receipt of the specimen.