

Vitamins B1, B2, B6

Synonyms

Water soluble vitamins

Clinical Indication

Diagnosis of vitamin B1 (thiamine), B2 (Riboflavin) or B6 (Pyridoxine) deficiency.

Symptoms of B1 deficiency include muscle weakness, neuropathy and cardiovascular abnormalities. Severe deficiency can cause Wernicke-Korsakoff syndrome, a brain disorder. Lack of vitamin B1 is common in people who have alcohol use disorder due to low intake. It can also occur in people with malabsorption (due to chronic illness, following weight loss surgery etc.) and patients on haemodialysis (due to increased loss).

Vitamin B2 can be found in most unprocessed foods and at high concentrations in yeast extract, liver and kidney. Deficiency is rare. Meat, milk, eggs and wheat bran are important dietary sources of vitamin B2 in the general population. The symptoms of B2 deficiency are difficult to distinguish in malnourished individuals due to concomitant deficiencies in other micronutrients.

Vitamin B6 is so widespread in foods it would be expected that deficiency in B6 would be accompanied by a concomitant deficiency in other water soluble vitamins thus making it difficult to differentiate between the symptoms of the various deficiencies. Specific vitamin B6 deficiency is rare. Chronic high doses of vitamin B6 supplementation is known to be toxic (causing neuropathy characterised by ataxia).

Testing for any of these vitamins must be discussed and agreed with the laboratory before sending.

Part of Profile / See Also

Request Form

Combined Pathology manual blood request form or ICE request

Availability / Frequency of Analysis

Referred Tests: Analysed at the Nutristasis Unit, St Thomas' Hospital ([Synnovis 8595](#)) if agreed with Consultant Biochemist.

Turnaround Time

Up to 3 weeks

Patient Preparation

Ideally a fasting sample should be collected, especially if the patient is receiving oral or parenteral vitamin supplementation. If this is not possible, the sample should be taken at least 8 hours post treatment.

Sample Requirements

Specimen Type

Whole blood collected into an EDTA tube. **Samples MUST be protected from light.**

Volume

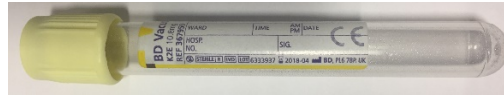
6 mL

Container



Purple top EDTA tube

Or



Lemon top EDTA tube



Or Paediatric EDTA (red top Sarstedt tube)



Or Paediatric EDTA (lavender top BD Microtainer tube)

Samples should be transported to laboratory immediately.

Reference Range & Units

Vitamin B1	66.5-200.0 nmol/L
Vitamin B2	174-471 nmol/L
Vitamin B6	35.2 – 110.1 nmol/L

Interferences
Interpretation & Clinical
Decision Value (if applicable)

For Vitamin B6, levels > 2000 pmol/g Hb indicate over supplementation, levels >4000 pmol/g Hb indicate risk of toxicity.

References

<http://www.viath.co.uk/our-tests/vitamin-b1>

<http://www.viath.co.uk/our-tests/vitamin-b2>

<http://www.viath.co.uk/our-tests/vitamin-b6>

<https://www.uptodate.com/contents/overview-of-water-soluble-vitamins>

Test code

B1, B2, B6

Lab Handling

B1, B2, B6 – EDTA whole blood stored in the referrals rack at 4C. If sample is taken on a Friday then freeze whole blood at -20C over the weekend and send Monday allowing sample to thaw in transit. Sent Monday – Friday by Global courier to St Thomas' Hospital, London. If for any reason there is a delay with sending the sample, freeze at -20C.

