

Vitamin E

Vitamin E is a fat soluble vitamin of which α tocopherol has the highest biological activity. It is found in vegetables, seed oils and nuts. It is absorbed in the small intestine with about half passing to the liver and half passing into the lymph. Within the blood it is transported bound to LDL and HDL. Vitamin E accumulates in the liver, muscle and adipose tissue.

Vitamin E is an important chain-breaking antioxidant in cell membranes. It also acts to modulate signal transduction pathways.

Deficiency

Deficiency is rare but may occur in

Premature and newborn babies
Conditions associated with fat malabsorption
Patients on parenteral nutrition
Abetalipoproteinaemia
Homozygous hypobetalipoproteinaemia
Familial isolated Vitamin E deficiency

This may result in *peripheral neuropathy* and *spinocerebellar syndrome*. Note that newborn babies have low serum Vitamin E concentration compared with adults, but may not have true Vitamin E deficiency ie with symptoms.

Toxicity

Relative to other fat-soluble vitamins, Vitamin E is safe. Few side effects have been reported even on very high doses. Indeed higher levels of Vitamin E may be 'desirable'.

Reference ranges

Neonate	4.6-14	umol/L
Child	9-28	umol/L
Adult	11.6-35.5	umol/L

Vitamin E is bound to lipoproteins and the results of Vitamin E analysis are reported as a molar ratio with serum lipids if elevated (and if enough sample supplied)

Ratio = Vitamin E (umol/L) / (cholesterol + triglyceride) (mmol/L)

The ratio is a good indicator of tissue stores

Paediatric Vitamin E/Lipid ratio

1-6 yrs	3-5
7-12 yrs	2-5
13-19 yrs	2-4

Adult Vitamin E/Lipid ratio

3.9-5.9

Specimen type

Serum (also lithium heparin or EDTA plasma)
Protect from light
Minimum volume 50 uL

Storage

Separate serum or plasma asap and freeze

Transport

First class post, ambient temperature

Address for specimens

Department of Clinical Biochemistry
Rotherham Hospital
Moorgate Road
Rotherham, S60 2UD

Cost (excluding VAT)

£12.50 (combined assay with Vitamin A = £22.00)

Turnaround

Weekly HPLC assay

External QA

UKNEQAS

Contact person

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