Alpha feto-protein; AFP

Pseudonyms: sometimes called alpha-1-fetoprotein, alpha-fetoglobulin.

General information

Collection container: Adults - serum (with gel separator, 4.9mL brown top).
Paediatrics - serum (1.2mL white top tube, no gel separator).

Type and volume of sample: The tubes should be thoroughly mixed before transport to the lab. 1mL whole blood is required as a minimum volume if only AFP is requested.

Specimen transport/special precautions: N/A

Laboratory information

Method principle: AFP is analysed on the automated instruments by a 2 site immunoassay with electrochemiluminescence detection.

The assay is standardised against the 1st WHO IRP 72/225.

Biological reference ranges:

Male/female	Range
<2 days	0-103990 KU/L
2-7 days	0-60750 KU/L
8-14 days	0-48590 KU/L
15-21 days	0-19000 KU/L
22-28 days	0-5500 KU/L
29 days - 6 weeks	0-4750 KU/L
6 weeks - 8 weeks	0-1650 KU/L
8 weeks - 3 months	0-850 KU/L
3 months - 4 months	0-350 KU/L
3 months - 5 months	0-100 KU/L
6 months - 9 months	0-30 KU/L
10 months - 18 years	0-5 KU/L
>18 years	0-10 KU/L
AFP can also be measured in other fluids (not urine) but these reference ranges do NOT apply	

Turnaround times:

Results should be available the same working day.
A request can be added on for this test to a sample collected no older than 7 days.

Clinical information

Factors known to significantly affect the results:

High-dose hook effect - samples with extremely high inherent values (>1 to 1.5 Million IU/L) may give a result that is only modestly raised due to the high-dose hook effect/antibody saturation. Any result which is not compatible with the clinical picture should be reported to the laboratory so the test may be repeated on a dilution. Please contact the laboratory.

Immunoassay interferences: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1904417/

Clinical decision points:
Increased AFP levels can be caused by liver cancer, germ cell tumour of the testis or less commonly other cancers (for example, stomach, bowel, lung, breast, lymphoma). Slightly increased levels of AFP are common in patients who have chronic hepatitis or cirrhosis and do not indicate the presence of cancer. It is of limited value in diagnosis even in combination with ultrasonography.

AFP is most useful in monitoring treatment of hepatocellular adenoma, hepatoblastoma or non-seminomatous germ cell tumours (with beta-hCG). The elimination half-life is approximately 7 days.

Review of clinically useful tumour markers: https://www.karger.com/Article/FullText/338393

(Last updated May 2016)