

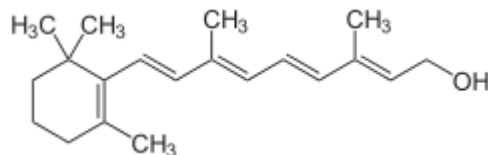
## Quantitative determination of retinol in plasma by LC-UV

Retinol is one of the animal forms of vitamin A. It is a diterpenoid and an alcohol. It is convertible to other forms of vitamin A as retinal, retinyl esters and retinoic acid.

Retinol circulates in blood bound to retinol binding protein (RBP) in the concentration range 0.3-5  $\mu\text{M}$ .

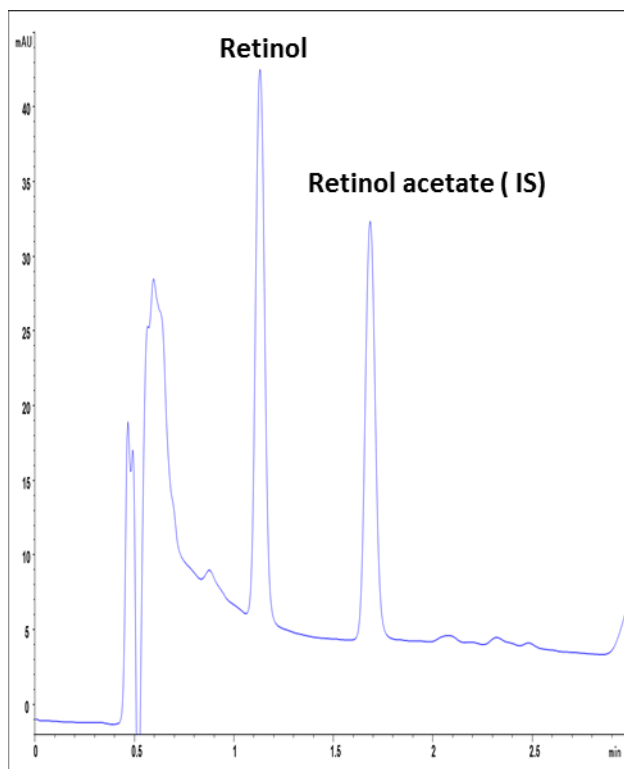
Serum retinol is typically maintained until hepatic stores are almost depleted. Values greater than 0.30 mg/L represent adequate liver stores, whereas values less than 0.10 mg/L indicate deficiency.

Vitas AM-091 separates all-trans retinol from matrix components and utilises retinols intense and specific UV absorbance at 325 nm. The method is based on Protein precipitation, liquid liquid extraction and RP-HPLC-UV.



All-trans Retinol

Retinol and the IS retinol acetate in plasma



### Method details:

- Technique: RP-HPLC-UV
- Sample Matrix: Plasma, serum
- Species: All
- Anticoagulant: All
- Required sample volume: 100  $\mu\text{L}$
- From premature children: 10  $\mu\text{L}$
- Shipping: Dry Ice, protect from light
- Method Range : 0.3-5.0  $\mu\text{M}$
- LOD: 0.01  $\mu\text{M}$
- Precision: 5.0 %
- Accuracy: NIST SRM, Labquality

Vitas is a Norwegian GMP certified chemical analysis contract lab, with 20 years experience in providing a high quality, custom chromatographic analytical service based on cutting-edge knowledge and technology.

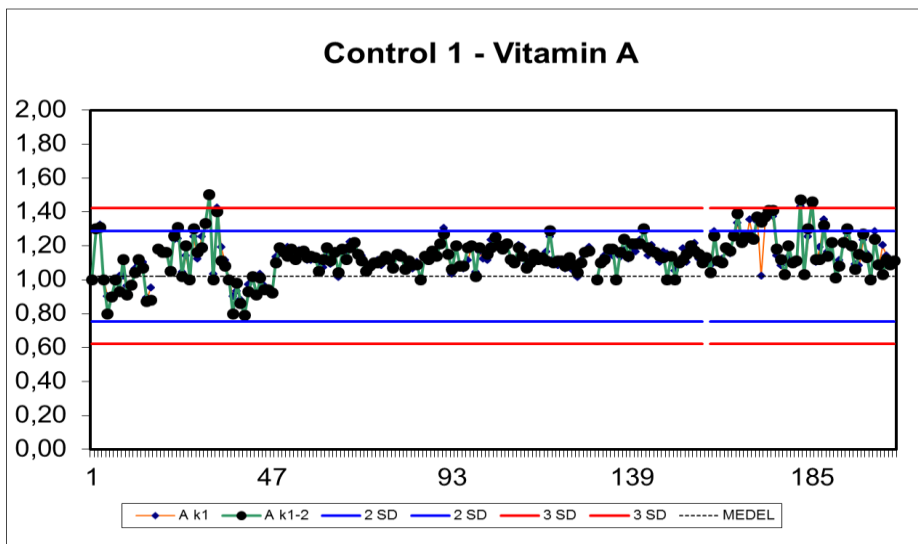
## Additional information:

- **Experience & Expertise**

- Vitas has performed the quantitative determination of retinol in human serum with AM-091 for close to 20 years and analysed more than hundred thousand samples altogether.
- From 1994- 2009 Vitas performed this assay as subcontractor for “Først Medisinske laboratorium” in Oslo. Først mainly receives samples from the Norwegian primary health care.
- Vitas has substantial expertise related to the biology and analysis of Vitamin A related compounds. We offer numerous methods for retinol, retinyl esters, retinoic acids, Vitamin A binding protein etc.

- **Quality assurance**

- Vitas has a comprehensive and stringent regime for quality assurance.
- In each series of sample there are serum based controls at two levels, early and late in the sequence. The obtained values are then plotted in a control plot and trended and used to release the samples analysed in the same series.
- An example of a control plot for retinol is shown below.



## Additional information page 2:

- External quality assurance Scheme (EQAS)
  - As long as Vitas performed this analysis for Furst we participated in the Labquality organized EQA for fat soluble vitamins.
  - Now Vitas instead function as a reference lab in the Nordic countries providing reference values for Vitamin ADE.
  - Thomas Gundersen, the CEO and CSO of Vitas, also fill the role as expert reviewer on this EQA for Labquality.

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