

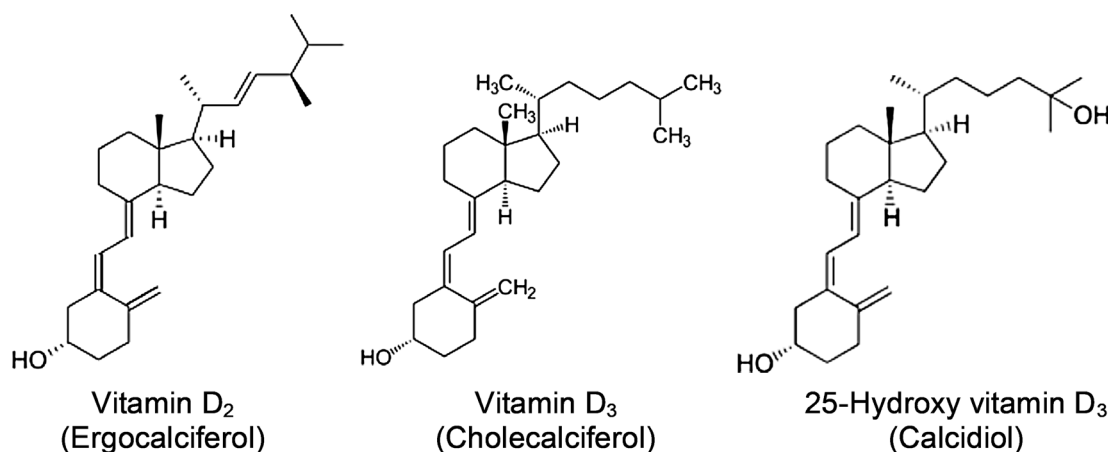
## Vitamin D Level Determination in Serum

Vitamin D<sub>3</sub> (cholecalciferol) is essential for the human body. Low levels of vitamin D<sub>3</sub> increase the risk of illness from a range of disorders. Babies, young children, pregnant mothers and old people are at a higher risk. Traditionally, vitamin D deficiency has been associated with rickets, a disease in which the bone tissue does not properly form, leading to soft bones and skeletal deformities. However, research is revealing the importance of vitamin D in protecting against a host of other health problems.



### What to Detect in Serum

The serum level of vitamin D is monitored to exclude deficiency symptoms. As vitamin D products and nutritional supplements often contain vitamin D<sub>3</sub> and/or vitamin D<sub>2</sub> (ergocalciferol), usually the concentration of 25-hydroxy vitamin D<sub>3</sub> (25-OH-D<sub>3</sub>, calcidiol) is determined. 25-OH-vitamin D<sub>3</sub> is the liver-generated storage form of vitamin D and provides a differentiated and meaningful impression of a patient's vitamin D level.



### Challenging Separation

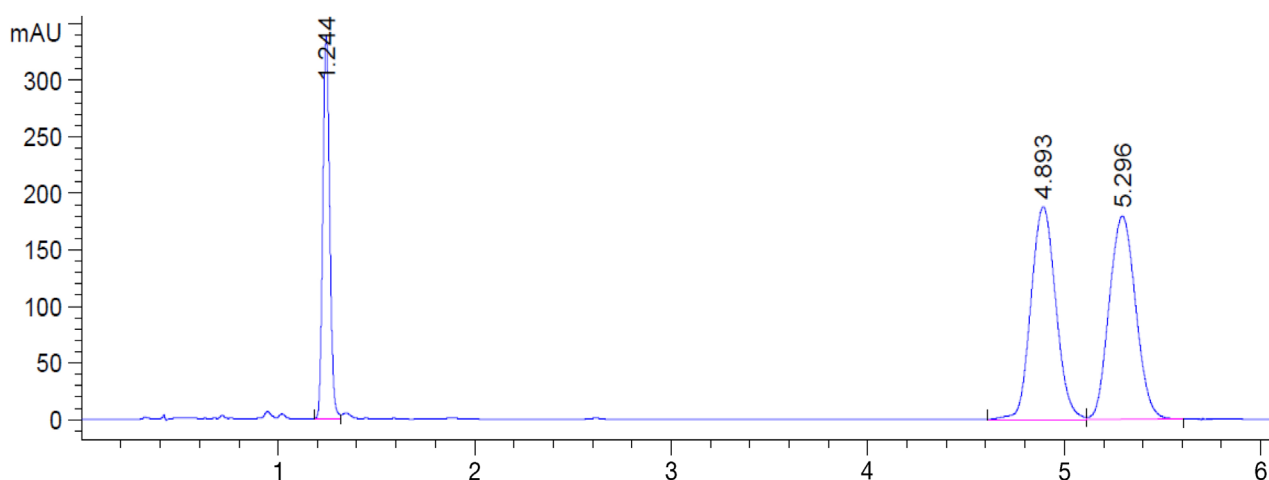
As vitamin D<sub>2</sub>, D<sub>3</sub> and 25-OH-vitamin D<sub>3</sub> are **structurally similar substances**, the (U)HPLC separation is therefore **very challenging**. Often, **special columns** in combination with **complex eluent mixtures** have to be used.

Using YMC-Triart C18 ExRS makes the separation **much easier!**

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### Baseline Separation in less than 6 min

The use of an UHPLC YMC-Triart C18 ExRS column under isocratic conditions allows a baseline separation of these three substances in less than 6 min. THF / acetonitrile (10/90) was used as mobile phase with a flow rate of 0.65 mL/min.



	25-OH vitamin D <sub>3</sub> (calcidiol)	Vitamin D <sub>2</sub> (ergocalciferol)	Vitamin D <sub>3</sub> (cholecalciferol)
Retention Time	1.244 min	4.893 min	5.296 min

Column: YMC-Triart C18 ExRS 1.9  $\mu$ m, 8 nm (100 x 2.0 mm ID)  
 Part No.: TAR08SP9-1002PT  
 Eluent: THF / acetonitrile (10/90)  
 Flow rate: 0.65 ml/min  
 Temperature: 30 °C  
 Detection: UV at 265 nm  
 Injection: 1  $\mu$ L (0.2 mg/mL calcidiol  
 0.5 mg/mL ergocalciferol  
 0.5 mg/mL cholecalciferol)