

# Analysis of Water-soluble Vitamins by HPLC-ECD

This note describes a determination method for water-soluble vitamins using an electrochemical detector (ECD).

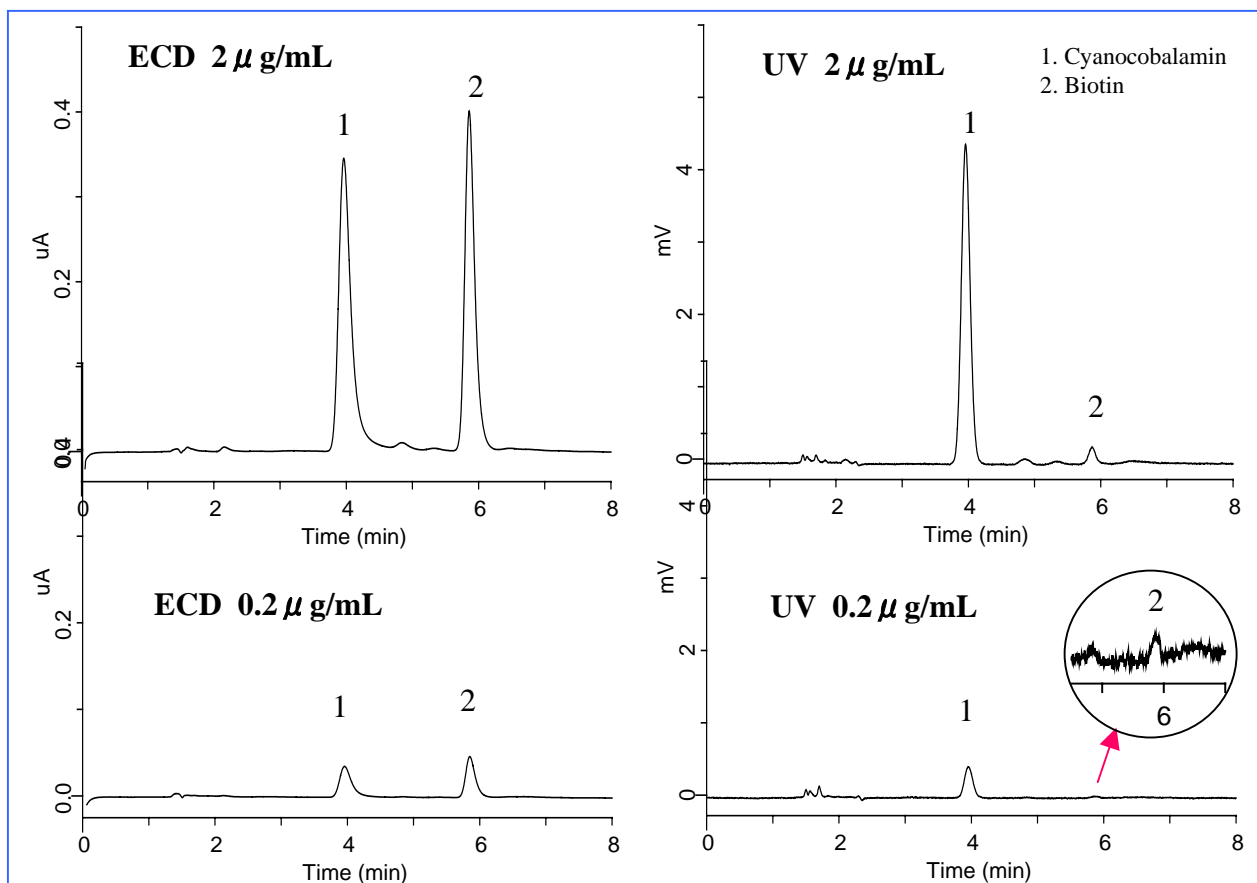
Analysis of water-soluble vitamins are generally performed using UV detection coupled with reversed-phase HPLC. However, sensitive determination of some vitamins [e.g. biotin (Vitamin B<sub>7</sub>)] with HPLC-UV system is difficult, because their response to UV detector is very weak. In such case, ECD is a powerful alternative to UV detector. Biotin can be detected

with high sensitivity as well as cyanocobalamin because both are electrochemically reactive species.

ED703 pulse is an ECD equipped with boron-doped diamond electrode. The diamond working electrode offers stable response, low background current and wide potential window. ED703 pulse is very useful to quantify various compounds.

(T.Tamura)

## Comparison of the sensitivity: ECD vs. UV detector



### Conditions

**Column** : Inertsil ODS-SP  
(5 μ m, 150 x 4.6 mm I.D.)  
Cat.No. 5020-02745

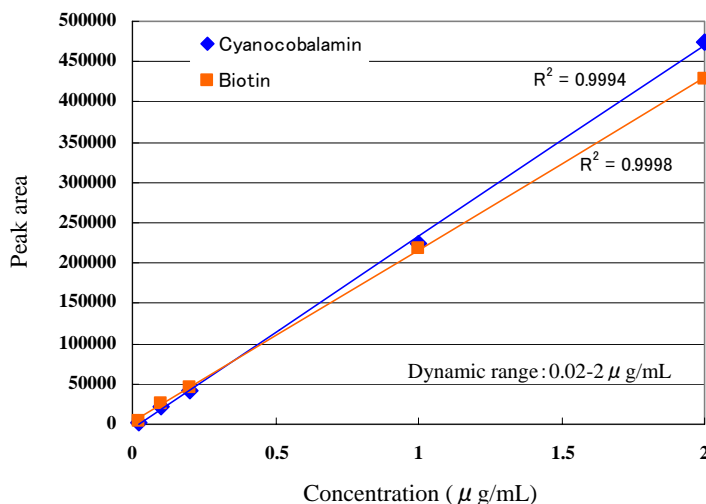
**Eluent** : A) CH<sub>3</sub>CN  
B) H<sub>2</sub>O(0.1% H<sub>3</sub>PO<sub>4</sub>)  
A/B = 18/82, v/v  
(gradient mixer)

**Flow rate** : 1.0 mL/min

**Col. Temp.** : 40 °C

**Detection** : ECD 1600 mV vs. Ag/AgCl  
(Boron-doped diamond electrode)  
UV 220 nm

**Inj. Vol.** : 10 μL



## An analysis of water-soluble vitamins with gradient elution

### Conditions

**Column** : Inertsil ODS-3

(5  $\mu$  m, 150 x 4.6 mm I.D.)

Cat.No. 5020-01731

**Eluent** : A) CH<sub>3</sub>CN ( 0.1% H<sub>3</sub>PO<sub>4</sub> )

+ 5 mM IPCC-05\*

B) H<sub>2</sub>O (0.1% H<sub>3</sub>PO<sub>4</sub> )

+ 5 mM IPCC-05

A/B = 5/95 – (12 min) – 40/60

\* IPCC-05: C<sub>5</sub>H<sub>11</sub>SO<sub>3</sub>Na

**Flow rate** : 1.0 mL/min

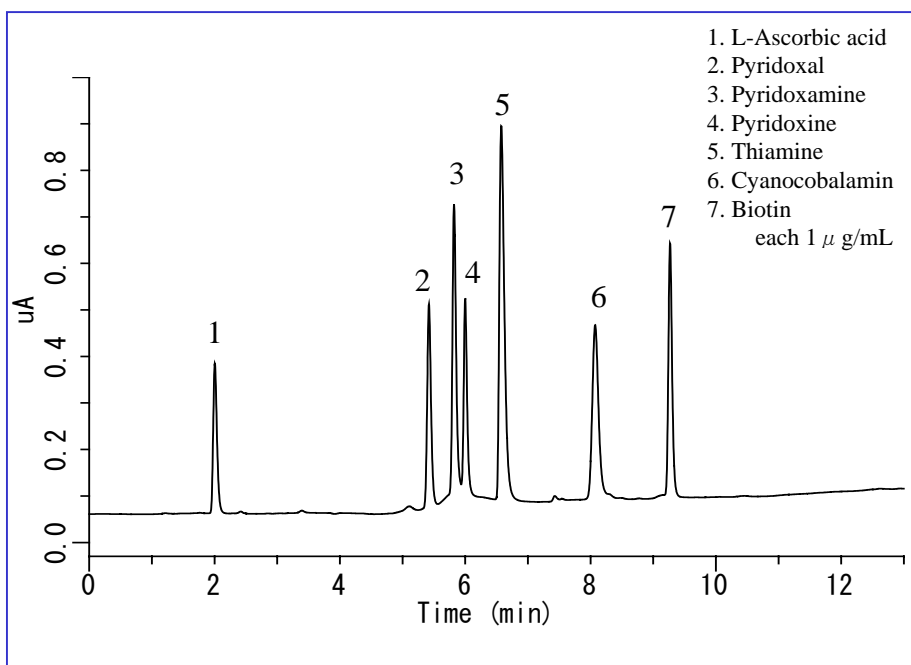
**Column Temperature**

: 40 °C

**Detection** : ECD 1600 mV vs. Ag/AgCl

(Boron-doped diamond electrode)

**Inj. Vol.** : 10  $\mu$  L

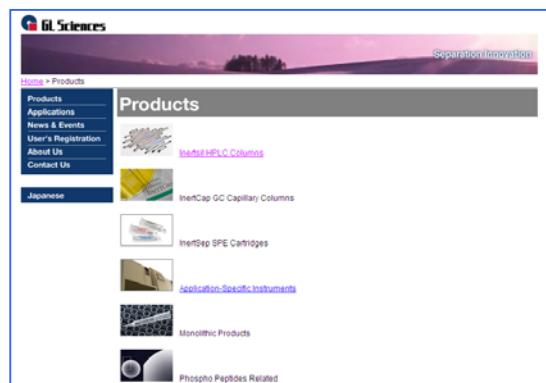


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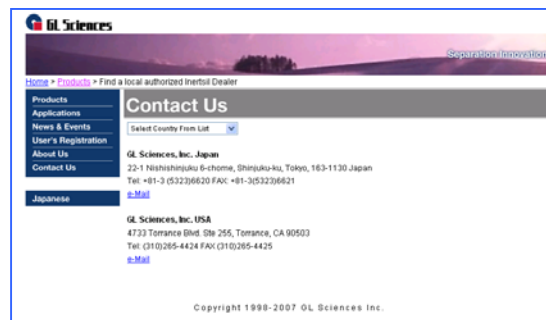
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