

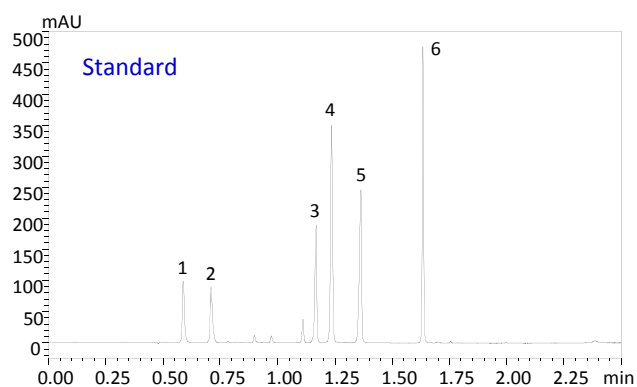
# Nexera Application Data Sheet No.16

## Ultrafast Analysis of Water-Soluble Vitamins

Water-soluble vitamins such as thiamine (vitamin B<sub>1</sub>) and riboflavin (vitamin B<sub>2</sub>) are generally analyzed by reverse-phase ion-pair chromatography. This document introduces an example of ultrafast analysis performed on water-soluble vitamins by gradient elution using Nexera and a Phenomenex Kinetex C18 column (particle size 2.6 μm, a core-shell column where a 0.35 μm porous membrane is combined with a 1.9 μm solid core).

### Batch analysis of 6 water-soluble vitamins

For standard mixtures (100 μg/mL each, 20 μg/mL only for riboflavin), good repeatability of retention time and peak area was achieved as shown in the table below. The results show Nexera's high-accuracy gradient performance and excellent injection volume repeatability.



Column	: Phenomenex Kinetex 2.6 μm C18 100 Å (100 mmL x 4.6 mmI.D., 2.6 μm)
Mobile phase	: A: 20 mmol/L (Sodium) Phosphate buffer (pH2.5) 2 mmol/L Sodium 1-hexanesulfonate B: Mobile phase A /Acetonitrile=2/3
Gradient	: B 5 % (0 min)→23 % (1 min) →100 % (2-2.5 min)
Flow rate	: 2.5 mL/min (Mixer 180 μL)
Column temp.	: 40 °C
Injection volume	: 5 μL
Detection	: UV 275 nm
Flow cell	: Semi-micro cell
Pressure	: 48 MPa

Repeatability of Retention Time and Peak Area

Peak No.	Retention Time %RSD	Peak Area %RSD
1	0.051	0.071
2	0.051	0.067
3	0.019	0.085
4	0.015	0.084
5	0.015	0.075
6	0.010	0.094

(n=6)

#### Peaks:

1. Niacin
2. Nicotinamide
3. Pyridoxine
4. Riboflavin phosphate
5. Thiamine
6. Riboflavin

### Analysis of commercially available nutrition drinks

Shown here are examples of analysis performed on commercially available nutrition drinks (quasi drug).

