

ELS and UV Detection of Succinic Acid

Technical Overview

Introduction

The Agilent Evaporative Light Scattering Detector delivers clean baselines, no drift, no solvent peaks and much greater response than a UV detector when analyzing succinic acid.

Succinic acid is an organic acid widely used in industry as an additive in products such as paints, clothing and many food products. It can be made from fermentation of glucose and used as a 4-carbon block for polymers.



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This dicarboxylic acid does not have a good UV chromophore and therefore the method of detection, if the solute is not to be denatured, is RI. However, the separation of succinic acid from other substances that require gradient elution, such as proteins, rule out the use of RI detection. This meant that UV detection at low wavelengths was the preferred method of detection (Figure 2).

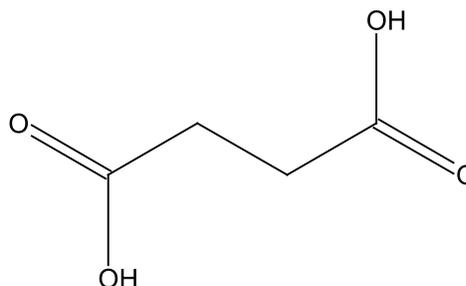


Figure 1. Structure of succinic acid.

Conditions

Sample: 1 mg/mL
Column: PLRP-S 300Å 8 µm, 4.6 x 150 mm (p/n PL1512-3801)
Eluent A: 1% ACN, 0.1% TFA, 99% Water
Eluent B: 100% ACN, 0.1% TFA
Gradient: 5-80% B in 20 min
Flow Rate: 1.0 mL/min
Detection: UV, 215 nm; Agilent ELSD

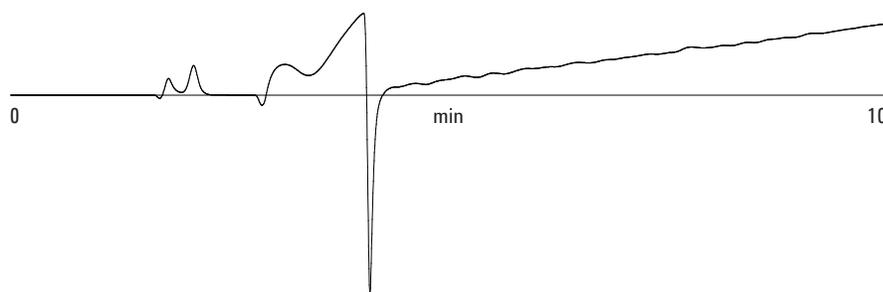


Figure 2. 20 µg succinic acid using UV detection.

The use of the Agilent ELSD overcomes these difficulties. With the Agilent ELSD, the baseline is stable, without any drift, and no solvent peak is detected (Figure 3).

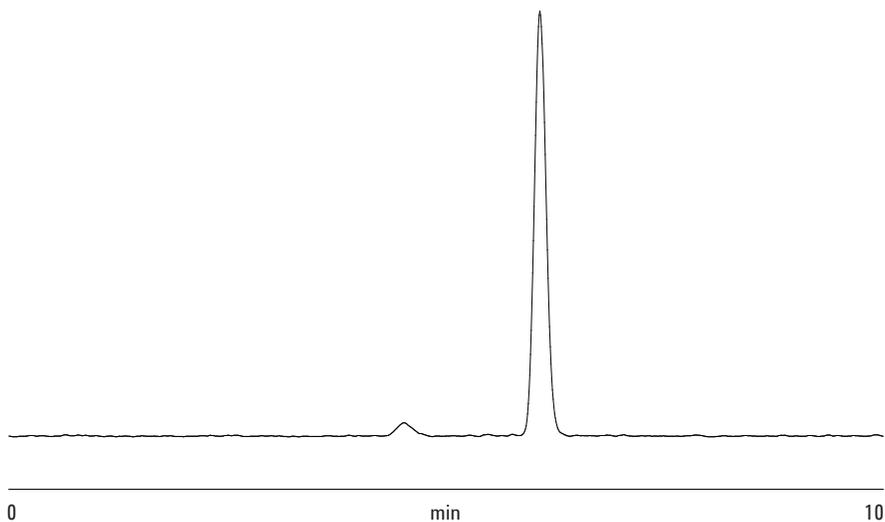


Figure 3. 20 µg succinic acid using Agilent ELSD.

The Agilent ELS detector gives a much greater response than the UV type, as succinic acid has a very poor UV chromophore. It is possible to detect succinic acid down to an on-column load of 2 µg, with a 1 mg/mL sample (Figure 4).

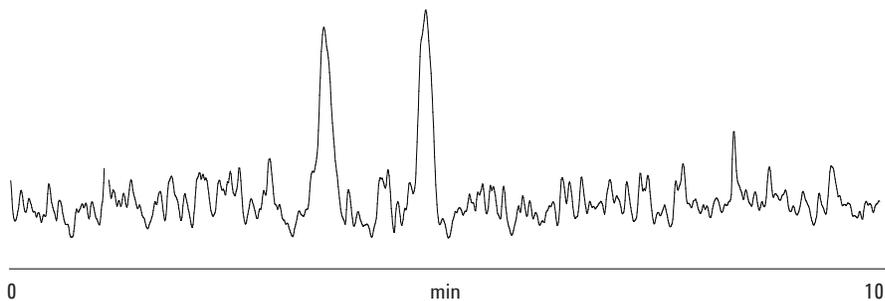


Figure 4. Limits of detection for succinic acid with the Agilent ELSD.

These data represent typical results. For further information, contact your local Agilent Sales Office.

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