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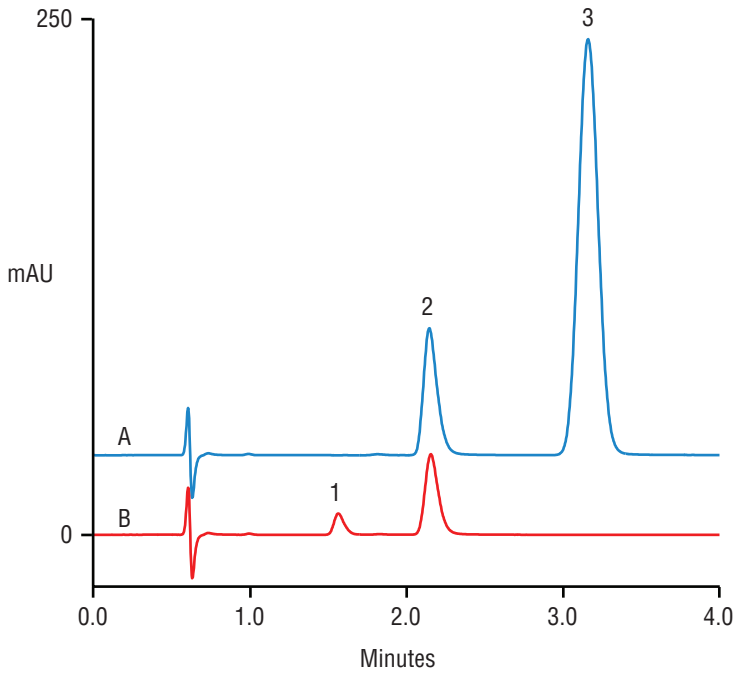
Nicotine Salts Separated Using a Thermo Scientific™ Acclaim™ Trinity™ P1 Column



Column:	Thermo Scientific™ Acclaim™ Trinity™ P1, 3 µm
Dimension:	3.0 × 50 mm with 10 mm guard
HPLC System:	Thermo Scientific™ Dionex™ UltiMate™ 3000 RSLC
Mobile Phase:	1.07 g Dibasic sodium phosphate dodecahydrate + 1.80 g monobasic sodium phosphate + 27 mg tetrasodium pyrophosphate decahydrate + 196 g acetonitrile + 750 g water
Flow Rate:	0.60 mL/min
Inj. Volume:	5.0 µL
Temperature:	30 °C
Detection:	UV at 210 nm
Samples:	A. Nicotine salicylate B. Nicotine bitartrate, 100 µg/mL
Peaks:	1. Tartrate 2. Nicotine 3. Salicylate

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Nicotine is a famously addictive alkaloid found in tobacco. Controlled doses of nicotine compounds are sometimes used to aid tobacco users to quit smoking. The molecule is both hydrophilic and basic, making it difficult to analyze with conventional C18 columns. Two commonly used salts are nicotine bitartrate and nicotine salicylate. Analysis of the counter anions is often required to assess the mass balance. While it is not difficult to analyze salicylate, tartrate is not adequately retained on any reversed-phase column, even using a 100% aqueous mobile phase. The Acclaim Trinity P1 is a unique column that provides reversed-phase, weak anion-exchange, and strong cation-exchange retention mechanisms at the same time, thus providing an ideal solution for simultaneous separation of the drug molecule and its counterion. A phosphate buffer system permits isocratic elution and UV detection at 210 nm. The conditions were optimized to best resolve both major and minor peaks. Alternate wavelengths are 258 nm for nicotine and 296 nm for salicylate.