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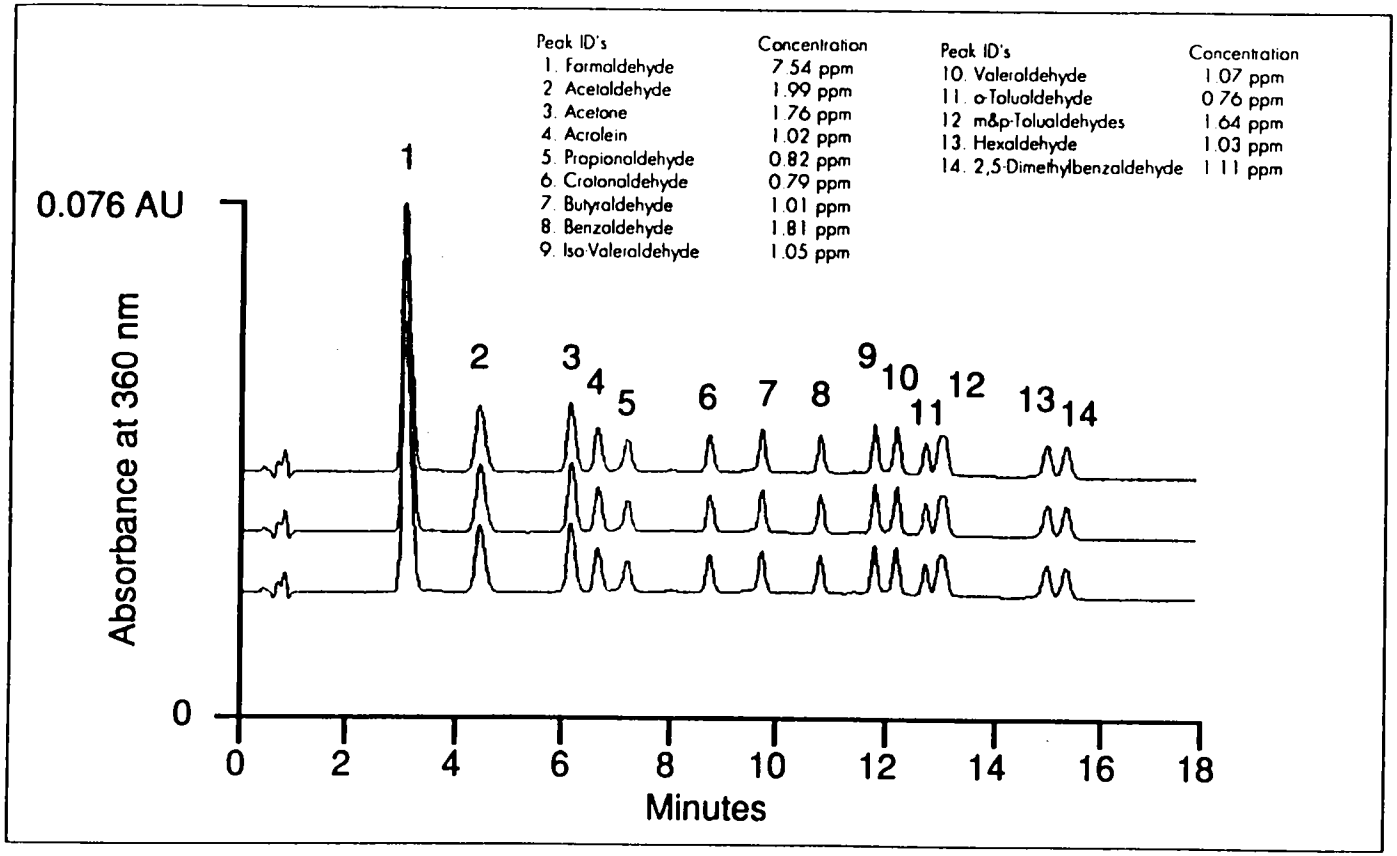
Reverse Phase Analysis of 2,4-Dinitrophenylhydrazine (DNPH) Derivatives of Aldehydes and Ketones Using the LC Module-1



An overlay comparison of three consecutive DNHP runs demonstrates the high degree of reproducibility provided by the LC Module 1. A new gradient elution protocol using a Nova-Pak C_{18} column provides excellent resolution of the DNPH derivatives of the aldehydes and ketones listed as target analytes in EPA Method TO-11.

Conditions:

Column: Nova-Pak™ C_{18} 3.9 mm x 15 cm

Eluent A: Water/Acetonitrile/ Tetrahydrofuran (stabilized) (60/30/10)

Eluent B: Water/Acetonitrile (40/60)

Gradient:

Time	%A	%B	Curve
Initial	100	0	*
1	100	0	6
10	0	100	6
17	100	0	11

Flow Rate: 1.5 ml/minute

Detection: UV at 360 nm

Injection Volume: 20 µl

Sample: 2,4-Dinitrophenylhydrazine derivatives of aldehydes and ketones

Objective:

To demonstrate the ability of the LC Module 1 to perform the analysis of DNPH derivatives of aldehydes and ketones listed in EPA Methods TO-11 and 8315.

Details:

System Suitability data on 5 consecutive injections of a 14 component DNPH derivatives standard mix using the LC Module 1 demonstrated high reproducibility of retention times, peak areas, and peak heights. % RSD values for retention times (< 0.7%), peak areas (< 1.5%), and peak heights (1.6%) are minimal, especially since the method uses gradient elution.

Sample Preparation: Derivatization procedure as described in the care and use manual for Sep-Pak® DNPH cartridges.

System:

Waters LC Module 1 and 860 Data Station.

References:

Waters Application Notebook Vol. 1, Rapid analysis of aldehydes and ketones from water matrices as 2,4-dinitrophenylhydrazine (DNPH) derivatives, 1991.

Waters Product Bulletin, Waters™ Sep-Pak® DNPH-silica cartridges for the analysis of formaldehyde, other aldehydes and ketones in air. (R77) 1992.