



Waters

Lab Highlights

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AN/FA,PA/QC/FF/NS

ANALYSIS OF SWEETENERS, PRESERVATIVES AND FOOD ADDITIVES WITH THE WATERS QA-1™ ANALYZER

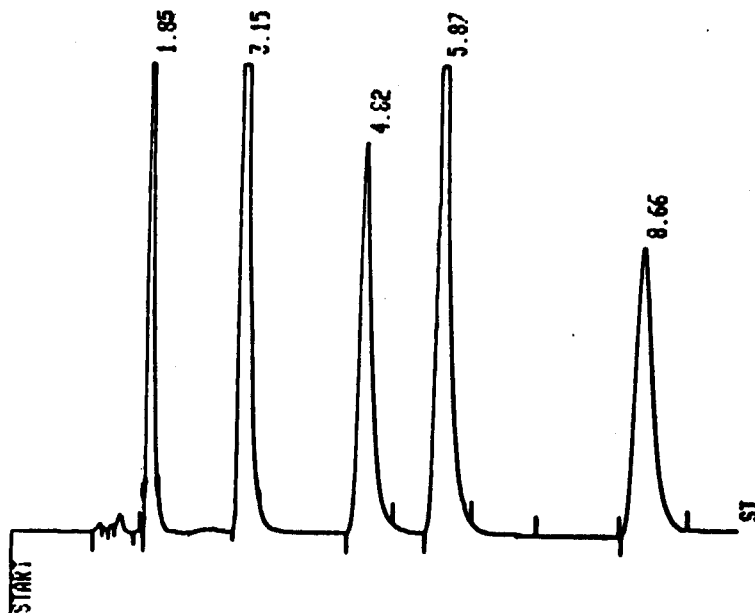
The occurrence of more and more processed foods within the food industry has meant the incorporation of a multitude of chemical additives. These may be present as sweeteners (saccharin or aspartame), preservatives (benzoic or sorbic acid), and additives (caffeine). This more common use of these exogenous ingredients has created a need for more specific quality control of processed foods. The QA-1™ Quality Analyzer can respond to this need.

Figure 1 shows a QA-1™ generated separation of some popular ingredients which are added to foods. This separation includes a variety of additives which demonstrates the versatility of the QA-1™ Analyzer as a quality control tool in the food industry. Since these ingredients may be found in a wide array of food matrices, the conditions may need to be modified to facilitate the optimum separation and quantitation of the specific component of interest. For example, the relatively high concentration of aspartame within the standard mix was necessary to generate the response seen at 254 nm. However, aspartame possesses a much higher extinction coefficient at 214 nm which can facilitate detection of much lower levels of this ingredient.

There are benefits to the reverse-phase chemistry presented here. The analysis volume (less than 40 ml) lends itself to the QA-1™ Analyzer design. Also, the ability to separate two sweeteners (saccharin and aspartame) and two preservatives (benzoic and sorbic acid), allows the analyst to monitor the presence of a variety of components in a single analysis.

There are also benefits due to the Radial-PAK™ NOVA-PAK™ C₁₈ column chemistry and configuration in this separation. The analysis volume of less than 20 ml combined with ample resolution mean that either the 320 version or the 340 version instrument with either the low or high pressure pump configuration may be used.

<u>R.T.</u> (min)	<u>Component</u>	<u>Concentration mg/100 ml</u>
1.85	Saccharin	30
3.15	Caffeine	20
4.82	Aspartame	400
5.87	Benzoic Acid	30
8.66	Sorbic Acid	1



CONDITIONS:

Instrument: Waters QA-1™ Quality Analyzer
Mobile Phase: 15/85 (CH₃CN/0.5% Ammonium Phosphate)
with 2.0% Glacial Acetic Acid
Column: Radial-PAK™ NOVA-PAK™ C₁₈
Run Volume: 20 ml
Flow Rate: 2.0 ml/min
Detector: UV 254 nm @ 0.1 AUFS
Injection Volume: 10 µl
Sample: Standards

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