

Application Brief No. 1008

930738

Highlights

Vitamin A is an essential micronutrient. An uncorrected vitamin A deficiency can lead to eye, skin, and reproductive disorders. Vitamin A is also being studied as a potential cancer-fighting agent. Current chemical methods of measuring total vitamin A, or retinol, are complex and lengthy.

A sensitive and specific method of measuring retinol is normal phase high performance liquid chromatography with fluorescence detection. Saponification and solvent extraction of the sample converts the vitamin A esters acetate and palmitate to retinol. Then after a filtration step, the sample can be directly injected into the HPLC system as the extraction solvents are compatible with the HPLC mobile phase.

Operating Conditions

Sample preparation: Saponification, extraction, and filtration

Column: Waters™ Nova-Pak™ Silica, 3.9 X 150 mm

Mobile phase: 0.5% Isopropyl alcohol in iso-octane

Flow rate: 1.0 ml/min.

Detection: Waters 470 Scanning Fluorescence

Excitation: 365 nm,

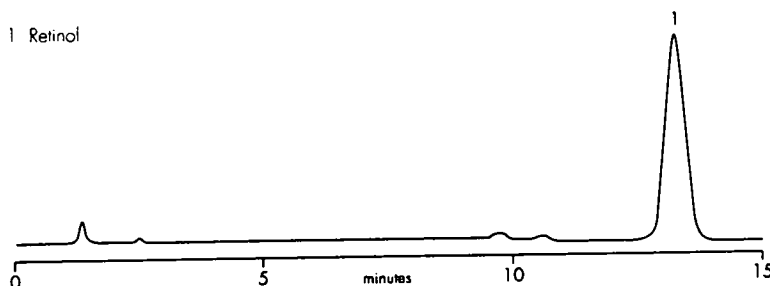
Emission: 510 nm

Note:

If interested in separating vitamin A esters, use similar conditions without saponification step.

Vitamin A in Feed Sample

1 Retinol

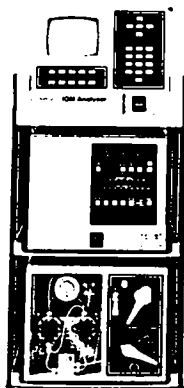


Reference

- 1 Thorpe, V. A., *J. Assoc. Off. Anal. Chem.*, 1990, 73(3), 463
- 2 Ball, G. F. M., *Fat Soluble Vitamin Assays in Food Analysis*, Elsevier Applied Science, Chapter 8 (1988)

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Ion Chromatography



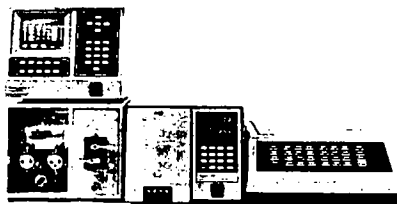
Stainless steel and non-metallic systems. Innovative detectors. Linear quantitation over a wide concentration range with single point calibration. If you need to analyze for mono- and divalent cations, ionic surfactants, organic acids, anions, metals, and metal complexes, talk to Waters.

Data management



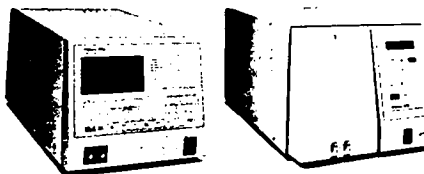
Single and multi-system data acquisition and control. Networking computers. Baseline™, Maxima™, and Expert™ Ease Chromatography Software. NEC and DEC hardware. From integrators to networking computers, Waters has a data solution to meet your every need.

PowerLine™ Systems



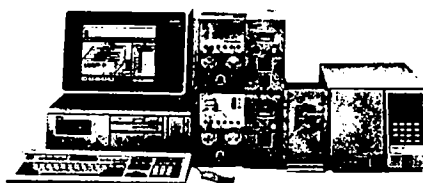
Single keyboard control and programming of pumps, injectors, and detectors with or without a separate personal computer. Waters PowerLine HPLC Systems put HPLC power where it belongs—at your fingertips. All Waters PowerLine HPLC, IC, GPC, GC and Preparative Chromatography Systems are controlled from the keyboard of the 600E PowerLine Module.

Detection



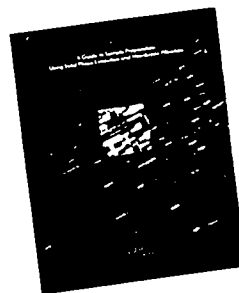
UV/Vis: photodiode array, fixed, variable and programmable wavelength. Refractive index. Conductivity. Electrochemical. Fluorescence: fixed and programmable/scanning wavelength. Waters offers the food technologist the best choice of detectors to solve separations problems now and in the future.

Special-purpose systems



Waters offers special-purpose systems for polymer analysis, amino acid analysis, peptide analysis, carbamate analysis, preparative chromatography, LC-MS, and sugar analysis. These systems come with installation and training, optimized methods, quality-tested chemistries, and the right combination of pumps, injectors, and detectors for reproducible analyses.

Chemical Products



Analytical to pilot plant scale chemistries. Bulk media. Specialty columns for amino acids, peptides, proteins, fatty acids, carbohydrates, organic acids, carbamate pesticide residues and polymers. Guard columns. Solid phase extraction cartridges. Radial compression technology. Sample filtration. Robotics. From sample preparation to post-column derivatization, Waters chemical products are essential for doing high-resolution chromatography.

Support and Service

Waters technical and service representatives are the best in the business. Along with Waters applications chemists, they create a support network which guarantees your satisfaction.

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