Waters
Lab Highlights
An Internal Communication of Applications and Techniques
Volume 2, No. 4
COSMETICS
82.600.036.005.049
(.078)

SEPARATION OF SMALL MOLECULES IN A CURLING GEL USING ULTRASTYRAGEL™ COLUMNS

Curling gels are complex mixtures of several emulsifying agents, conditioners, stabilizers and other ingredients formulated in water. Liquid-liquid extraction systems for sample preparation are undesirable because the emulsifying agents present in the gel prevent phase separation of the extraction solvents. THF is a solvent which readily dissolves all components of the formulation. Since many components have varying molecular weights and the components present in smallest concentration are strong UV absorbers, dual detection with UV and RI detectors with separation based on size appeared to be a logical approach to the separation.

Two grams of sample were dissolved in 50 ml of tetrahydrofuran and the GPC separation was completed at 1 ml/min on a set of 1-500Å and 2-100Å ULTRASTYRAGEL columns.

Elution volumes of standards are marked on the chromatogram. Most components can be identified, except for the diols and triols which are unresolved from one another. Sequential analysis for the alcohols could be readily accomplished if necessary by simply collecting the peaks and injecting in a different system. Clearly, in a minimum of time and with little sample preparation, a separation on ULTRASTYRAGEL with dual detection provides a great deal of information about the formulation.

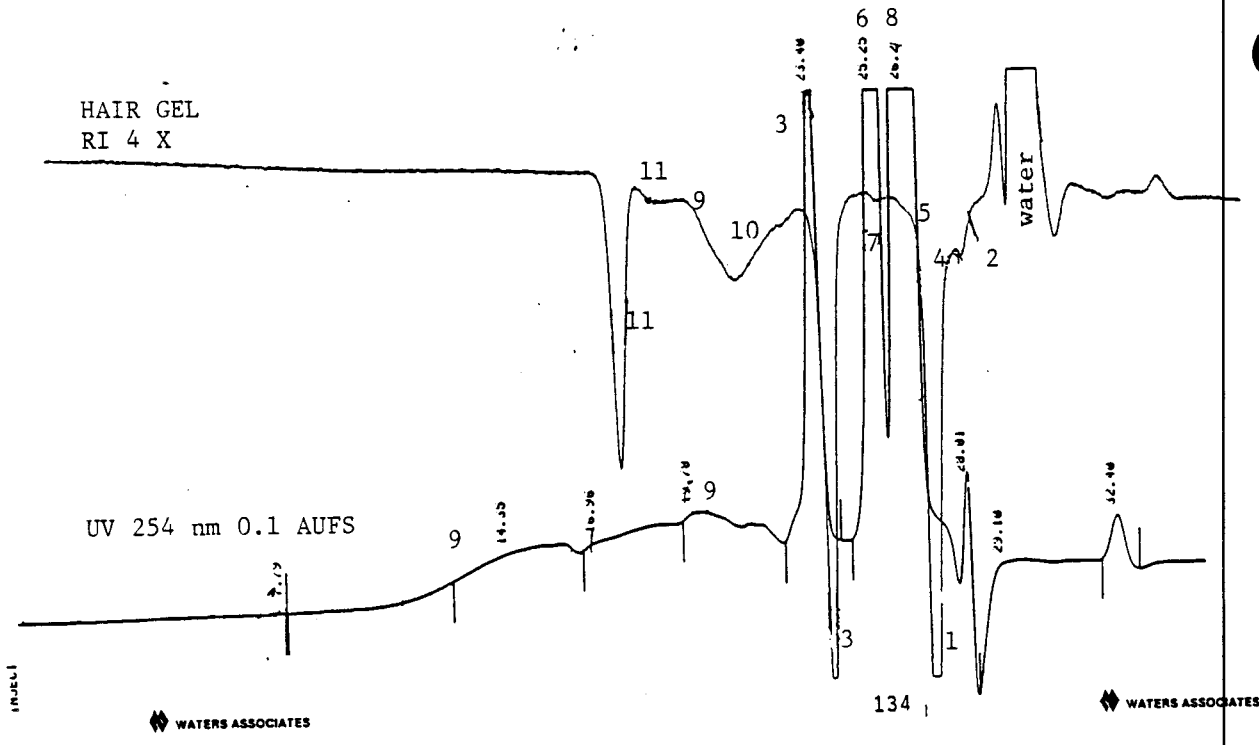
See reverse side for chromatogram.

MILLIPORE®
Waters Associates Milford, Massachusetts 01757 / (617) 478-2000

TABLE 1

COMPONENTS OF CURLING GEL

1. Glycerine
2. Propylene Glycol
3. Octyl Dodecanol
4. Hexylene Glycol
5. 2-Ethyl-1,3-hexanediol
6. Propyl Paraben
7. dl-Panthenol
8. Methyl Paraben
9. DEA-Oleth-3-Phosphate
10. PEG 600 Monolaurate
11. Polyoxamer 403



Hal Richardson