Waters
Lab Highlights
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RAPID SAMPLE CLEANUP OF SULFONAMIDES FROM A TOPICAL CREAM

Drugs are frequently formulated for topical use as complex water-in-oil emulsions. Frequently, GPC with ULTRASTYRAGEL™ columns is a convenient, rapid method which requires no sample cleanup. (See previous Lab Highlight.) However, a molecular weight difference of about 20% is required for good quantitation.

A group of three sulfonamides (sulfacetamide, MW=214; sulfabenzamide, MW=276; sulfathiazole, MW=255) were formulated as a cream. Since the molecular weights and structures are very similar ($\Delta MW \approx 10\%$), GPC does not work, and a sample cleanup is necessary. Reversed-phase Sep-PAK® cartridges were used to remove the lipid components; the sulfa drugs were eluted at the void volume with a sufficiently strong mobile phase. The procedure is listed in Table 1. Figure 1 shows the separation of the three sulfa drugs on a μBONDAPAK™ C_{18} cartridge in a Z-Module™ RCSS.

TABLE 1

RAPID CHROMATOGRAPHIC CLEANUP

OF SULFA CREAM

1. Dissolve 1.00 g sulfa cream in 15 ml tetrahydrofuran (homogeneous solution) in 100 ml volumetric flask.
2. Dilute to 100 ml with 0.01 M $(NH_4)_2HPO_4$ solution (precipitation of lipid components).
3. Pretreat a Sep-PAK® C_{18} cartridge (10 ml of THF, 10 ml of H_2O)
4. Elute 5 ml aliquot of suspension through Sep-PAK® cartridge (very slowly) (3 ml in 1 to 2 min).
5. Discard first 1 ml, collect 2 ml.
6. Using eluted fraction, perform the chromatographic assay as in Figure #1.

See reverse side for Figure 1.