

Sulpha Drugs

The antimicrobial drugs known as the sulphonamides, or sulpha drugs, were the first of the 'wonder drugs'. In the 1930's, chemists found that by appropriate substitution of the sulphanilamide molecule, a series of compounds was obtained each of which had slightly different antibacterial properties. The relative potencies of the sulphanamides used systematically appear to depend mainly on differences in solubility, absorption and excretion as a result of such substitution, rather than on any specificity. The mode of action of the sulphonamides is bacteriostatic rather than bacteriocidal, and is considered to be due to the similarity of their chemical structures to p-aminobenzoic acid, a substance that is essential for the synthesis of folic acid by bacterial cells. Without folic acid the bacterial cell cannot divide and is halted in metaphase (Reference 1).

Sulphonamides act on many species of bacteria, including streptococci and many gram-negative rods such as *Escherichia coli* and *Proteus spp.* Resistance to sulpha drugs has appeared rapidly in many strains and their main use now is against organisms causing urinary tract infections and in certain veterinary applications.

In the latter case, it is possible for sulphonamide

Keywords:

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residues to enter the food chain, especially via meat and dairy products. Sulphonamides are contra-indicated in the presence of renal or hepatic disease and in hypersensitive patients. Furthermore, because sulphonamides are secreted in milk, they should be used with caution in nursing mothers owing to the danger of developing permanent brain damage (kernicterus) in premature and newborn babies.

HPLC is the method of choice for trace level analysis of sulpha drug residues in a variety of samples. In Figure 1, the separation of seven sulphonamide drugs under isocratic conditions with UV detection is shown.

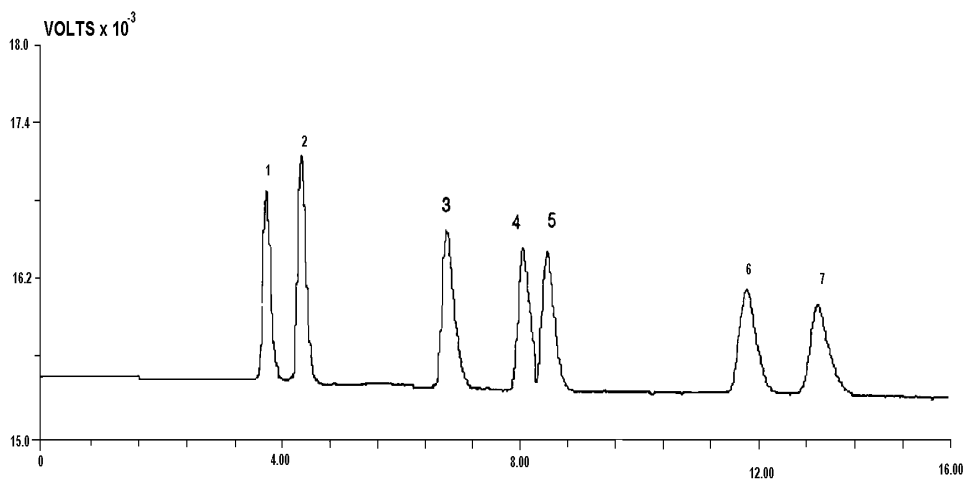


Figure 1 Separation of Sulphonamide Standards



GBC HPLC Instrumentation

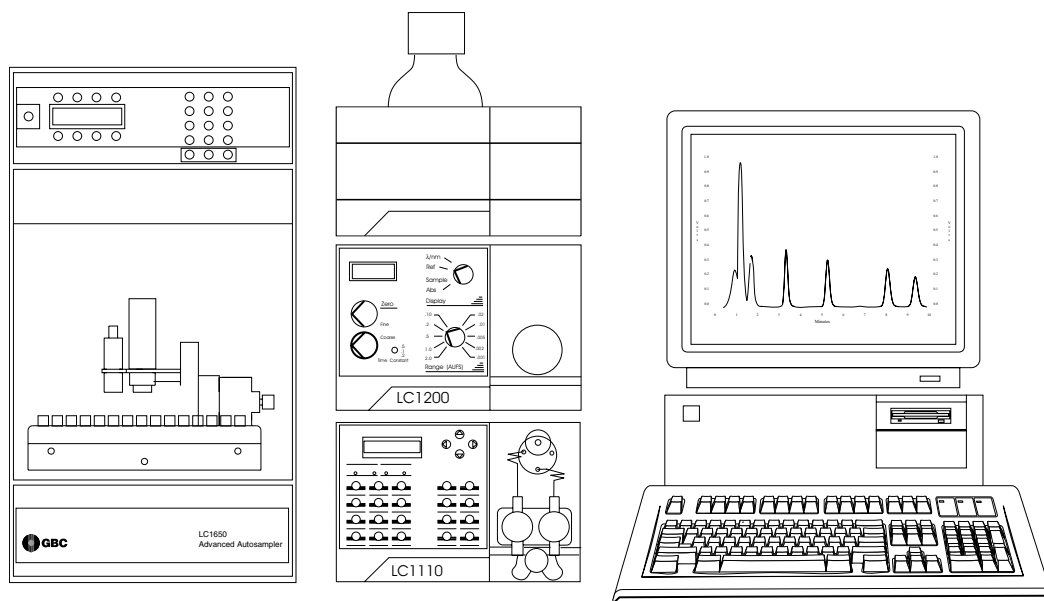
LC1110 Dual Piston HPLC Pump
LC1200 Variable Wavelength UV/Vis
Detector
LC1650 Advanced Autosampler
WinChrom Chromatography Data
Management System
LC1445 System Organiser

Conditions

Column: Spherisorb S5 C8,
250 mm x 4.6 mm ID
Guard: 50 mm x 4.6 mm ID
Mobile Phase: Acetonitrile:Water (17.5:82.5)
Flow Rate: 1 ml/min
Detection: UV at 270 nm

Reference

1. 'The Pharmaceutical Codex' (11th Edition, 1979),
p.867.



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