

Isolation of Aminoglycoside Antibiotics in the Synthesis of Amikacin

Reveleris® iES Flash Chromatography System

Introduction

Bacterial resistance to aminoglycoside antibiotics has been a problem leading to clinical failures.^{1,2} One such drug, kanamycin A, is a mixture of aminoglycosides and has been used as a precursor to its semi-synthetic acyl

derivative, amikacin. The later is a modification with 4-amino-2-hydroxybutyryl group to protect against the enzymic deactivation while maintaining its activity.

Experimental

Run Conditions

Cartridge: Reveleris® C18 12g

Flow rate: 36 mL/min

Equilibration: 5.0 min

Run length: 10.0 min

UV1 wavelength: 220 nm

UV2 wavelength: 254 nm

ELSD carrier: Iso-proponal

Solvent A: Water with 0.1% TFA

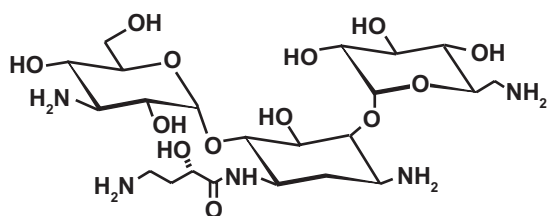
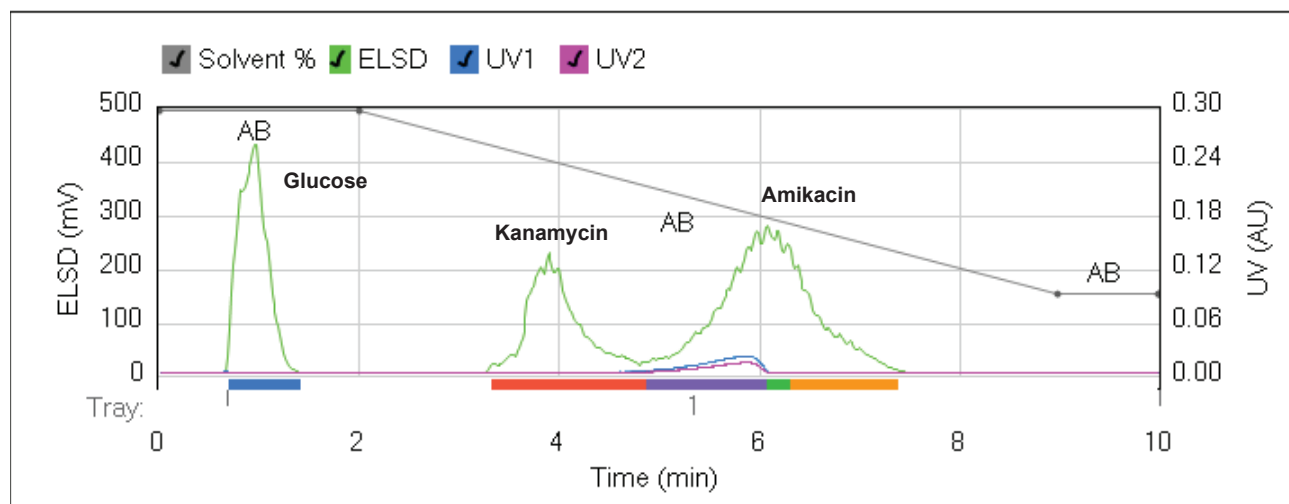
Solvent B: Acetonitrile

Gradient Method

Step	Time (min.)	%B
1	0	99
2	2	99
3	7	30
4	1	30



Results and Discussion



Amikacin

Conclusion

ELSD of RevealX™ technology detects the non-chromophoric compounds and helps to isolate kanamycin A from amikacin and glucose present in the mixture. The separation is done using a C18 reversed phase Reveleris cartridge with trifluoroacetic acid as the modifier in the mobile phase.

References

1. Medicinal natural products; a biosynthetic approach, 3rd edition; Dewick, P.; John Wiley & Sons, Inc., Hoboken, New Jersey, 2009.
2. Glycochemistry; principles, synthesis, and applications; Wang, P. G., Bertozzi, C. R.; Marcel Dekker, Inc., New York, 2001.

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