

Reveleris® X2 Flash System

Isolation of Aminoglycoside Antibiotics in the Synthesis of Amikacin

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.

Flash Chromatography Conditions:

Cartridge: Reveleris® C18 12g
 Flow Rate: 36mL/min
 Equilibration: 5.0 min
 Run Length: 10.0 min
 UV1 Wavelength: 220nm
 UV2 Wavelength: 254nm
 Solvent A: Water with 0.1% TFA
 Solvent B: Acetonitrile

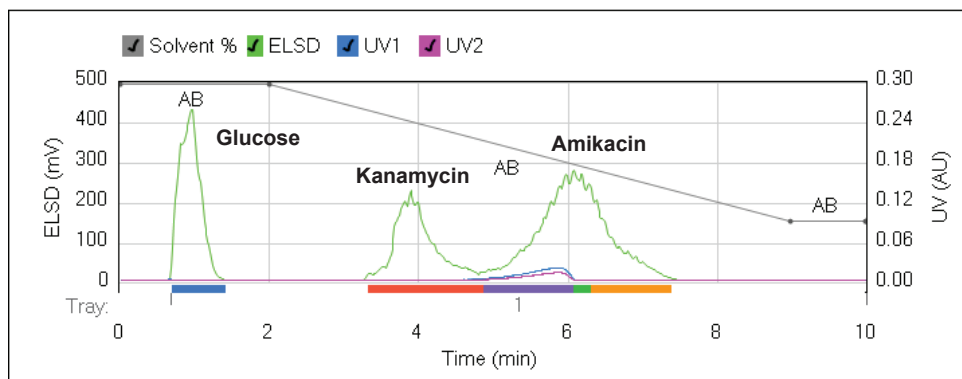
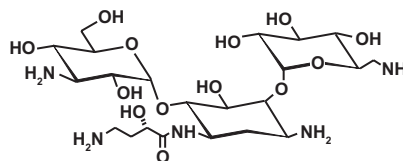


Figure 1: Purification of amikacin from its precursor, kanamycin A

Gradient Table

Step	Time (min.)	%B
1	0.0	99
2	2.0	99
3	7.0	30
4	1.0	30



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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