Improved crystallization method for purification of vancomycin using ionic liquid

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Crystallization is a simple, energy-efficient and environmentally friendly process for purifying vancomycin from fermentation broth. However, the crystallization process has been inherently problematic due to the lengthy crystallization time that is required. An improved crystallization process could significantly reduce the crystallization time and improve the crystal quality of vancomycin by adding ionic liquid into sample. Vancomycin crystallization time (24 hr→12 hr) was dramatically shortened compared to the control by adding ionic liquid, 1-butyl-3-methylimidazolium tetrafluoroborate. It also optimized the key parameters of the crystallization process with ionic liquid. The optimal ionic liquid type, concentration, pH, conductivity, temperature, and distilled water/acetone ratio were 1-butyl-3-methylimidazolium tetrafluoroborate, 20%(v/v), 4.5, 10 ms/cm, 10 C, and 1/3.5(v/v), respectively. Since high purity vancomycin (high crystal quality) can be obtained in high yield and the crystallization time can be reduced, this improved method is expected to significantly enhance the final purification process.