Influence of Crystallization Conditions on the Purification of Vancomycin

의지연, 김진현*
공주대학교
(jinhyun@kongju.ac.kr*)

In this study, we optimized the important process parameters of crystallization to obtain a high purity and yield of glycopeptide antibiotics vancomycin in a purification step. Particularly, the study has observed how the main process parameters have an influence on the formation of crystal during crystallization using an electron micrograph. The morphology of crystal was identified through SEM, XRD analysis. Especially when the storage temperature was 10℃, the crystal was produced. It could be found that, at other temperature, a conglomeration (gelation), disintegration and cohesion phenomenon were occurred and thus, the temperature had a decisive influence on the crystal formation of vancomycin. Also, the highest purity (97.8%) and yield (95.1%) could be obtained at 10℃. Under the optimum crystallization condition (distilled water/acetone ratio: 1/3.5 (v/v), storage temperature: 10℃, storage time: 24 h, pH: 2.5, conductivity: 20 ms/cm, initial vancomycin concentration: 0.1 g/mL, stirrer velocity: 640 rpm), vancomycin with a high purity (>97.0%) could be effectively purified in a high yield (>95.0%) from vancomycin with purity of 88%.