Studies on the Clearance of DNA and virus from Protein solution by Membrane

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Abstract

In this study used membrane filters, this is one of the physical methods, to conduct research about the analysis of the removal of DNA and virus as two of the sources of biomedical product contamination. First, we used membrane filters to eliminate DNA from solution. The membrane filters used for DNA elimination were .2um membrane filter and anion exchange membrane filter (Q15x). After measuring the efficiency by using each filter, we found excellent result that Q15x using change had elimination efficiency of at least 4.5 log, the chromatography was reusable, and it had advantage that the disinfection can be done at the temperature of 120℃. Second, we used membrane filters to eliminate virus from protein solution. The virus used was HCMV, and MRC-5 cell was used for the cultivation of virus. Then, we used .2um membrane filter, Q15x, cat-ion exchange membrane filter (S15x), and nano filter in order to eliminate the virus. After we assessed the efficiency by measuring the number of virus derived from each filter, it was found the result of >4.31, >4.19, >4.62, >4.71, and among the filters, nano filter showed excellent elimination rate; however, after we compared the purity measured the amount of protein which was collected at the last stage, it was found that S15x which uses unique structure of virus showed high elimination rate as high as 98.6%.

Key Words ; HCMV, MRC-5, S15x, Q15x, nano filter

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