

# Purification of animal viral vaccine from cell supernatants by size exclusion chromatography

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## Introduction

For the moment the purification processes of veterinary viral vaccines are generally simple and the yield and quality low. In order to improve the purity and safety of these viral vaccines, to reduce the side effects and enhance the productivity, we have developed a new efficient purification process of these vaccines by using WorkBeads™ 40/1000 SEC.

WorkBeads 40/1000 SEC is an agarose based chromatography resin for size exclusion chromatography with high selectivity resulting in that the different protein peaks are well separated with greater distance from each other than comparable products made from synthetic polymers.

## Results

After purification by WorkBeads 40/1000 SEC, the purity and titer of the virus were increased by 9.5 and 2.3 times, respectively. WorkBeads 40/1000 SEC has high capacity to purify virus even when using high sample loadings. This process purification not only improved the purity and potency of the product, it also reduced the production time, suggesting that it is suitable for virus purification.

The clarity and colour of the virus sample was improved by the purification on WorkBeads 40/1000 SEC (Figure 1 A), and there were no significant difference among different batches. The virus was diluted about 1.5 times after purification and the production cycle of each batch was approximately 45 min. Even when the sample loading was increased to 8.5% of the column volume (CV), it can still effectively separate the virus from the impurities.

(A)

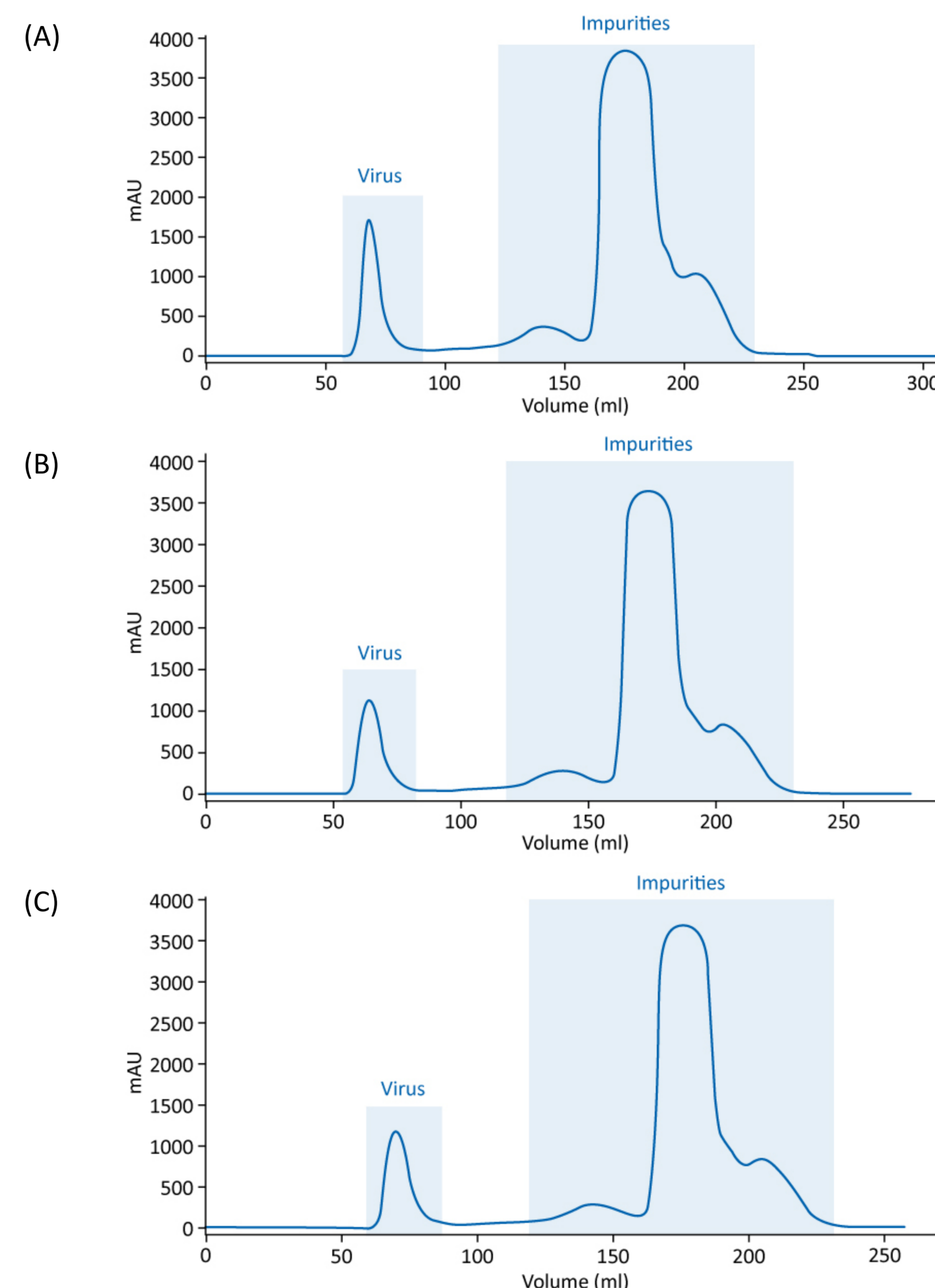


(B)

Sample	Vaccine potency/IU
Before purification	6.67
After purification	15.48

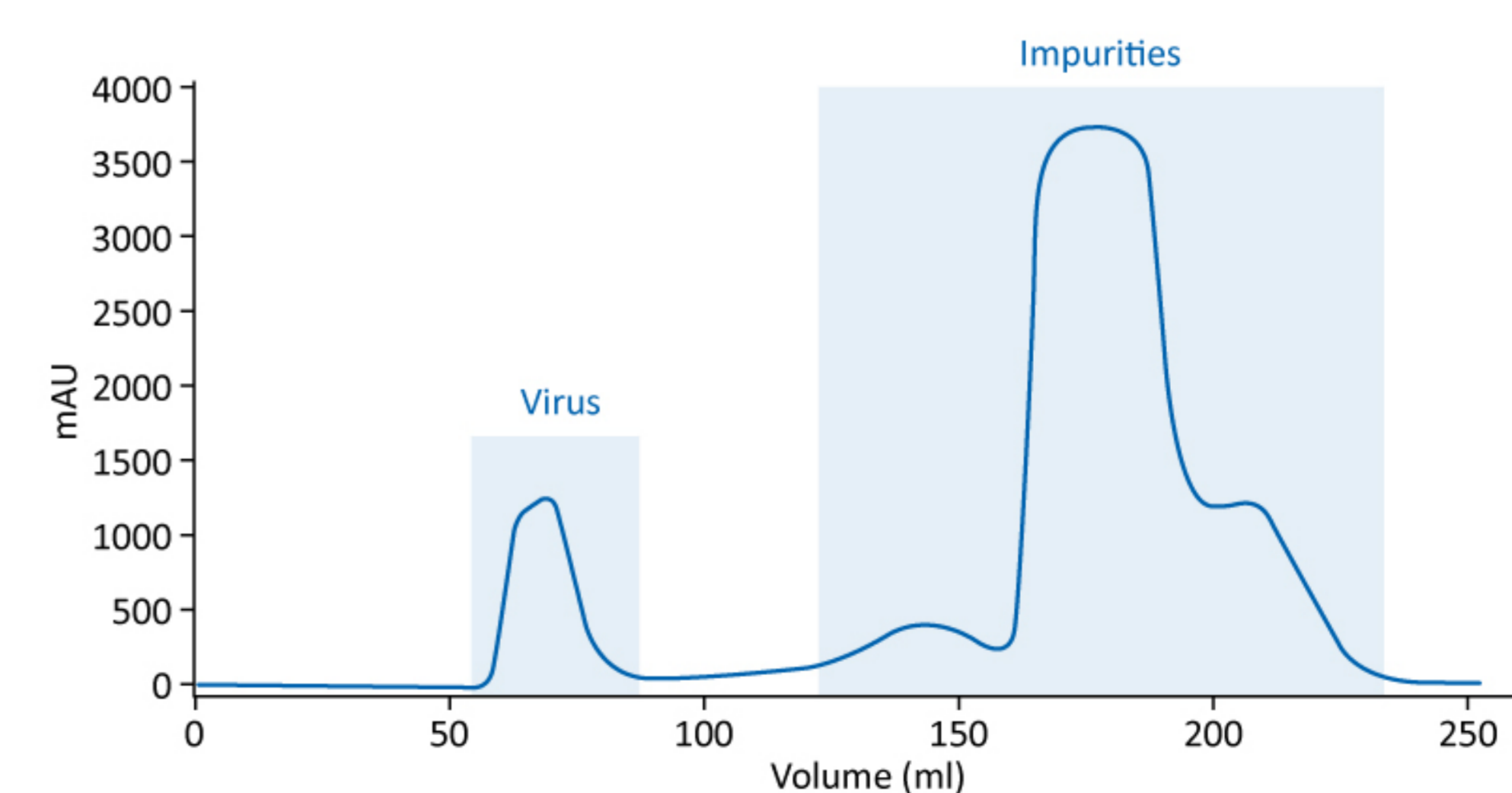
**Figure 1.** Comparison of the appearance (A) and titer of virus (B) before and after purification. A: From left to right is before purification and after purification, respectively.

**Resin:** WorkBeads 40/1000 SEC  
**Column volume:** XK 16 x 880 mm, 176 ml  
**Flow rate:** 5 ml/min, 150 cm/h  
**Sample:** Inactivated rabies virus, 10 ml (5.7% CV)  
**Buffer:** PBS, pH 7.2



**Figure 2.** Reproducible results, three batches (A, B, C) of inactivated rabies virus purified on WorkBeads 40/1000 SEC.

**Resin:** WorkBeads 40/1000 SEC  
**Column volume:** XK 16 x 880 mm, 176 ml  
**Flow rate:** 5 ml/min, 150 cm/h  
**Sample:** Inactivated rabies virus, 15 ml (8.5% CV)  
**Buffer:** PBS, pH 7.2



**Figure 3.** Purification of inactivated rabies virus on WorkBeads 40/1000 SEC by increasing the sample loading.