

## Cellufine Sulfate

Cellufine Sulfate is the group specific media which can be used for purification of viruses and blood coagulation factors, and the manufacture of vaccines, etc.

### For virus

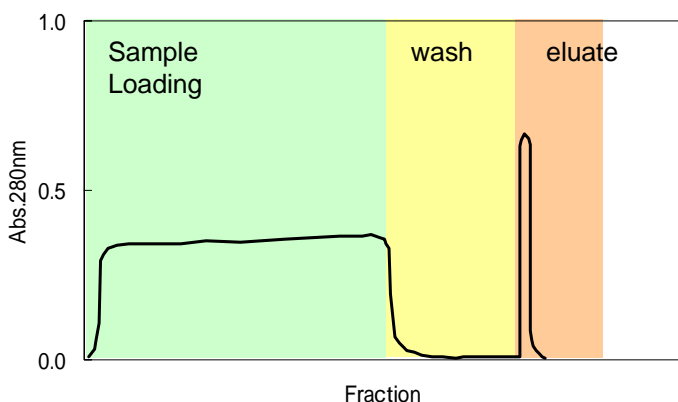
Table.1 Typical conditions for virus purification using Cellufine Sulfate.

| target                      | Adsorption            | wash                     | Elution                         | ref. |
|-----------------------------|-----------------------|--------------------------|---------------------------------|------|
| Rabies virus                | 0.01M PB,pH7.2        | 0.01M PB,pH7.2           | 0.01M PB,pH7.2+1M NaCl          |      |
| Influenza Virus             | 0.01M PB,pH7.4        | 0.01M PB,pH7.2+0.2M NaCl | 0.01M PB,pH7.0+1.5M NaCl        |      |
|                             | 0.01M PB,PH7.2        | 0.01M PB,pH7.2           | 0.01M PB,pH7.2+1M NaCl          |      |
| Japanese Encephalitis Virus | 0.01M carbonate,pH9.0 | 0.01M carbonate,pH9.0    | 0.01M carbonate,pH9.0+0.2M NaCl | 1    |
|                             | 0.01M PB,pH7.4        | 0.01M PB,pH7.4           | 0.01M PB,pH7.4+1M NaCl          | 2    |
| AssociatedViralVector       | 0.01M PB,PH7.2        | 0.01M PB,PH7.2           | 0.01M PB,pH7.2+1M NaCl          | 3    |

PB=Phosphate buffer

Table.2 There are many applications of Cellufine Sulfate in the concentration or purification of viral and microbial antigens, proteins and viruses.

| Virus                 | Viral/Microbial Agents      |  |
|-----------------------|-----------------------------|--|
| Rabies                | Feline Calicivirus          | Herpes Simplex gA and gB                         |
| Influenza             | Respiratory Syncytial Virus | Glycoprotein Subunits                            |
| Japanese Rncephalitis | Human Herpes Simplex        | Hepatitis B surface Antigen                      |
| Feline Leukemia       | Human Measles               | Filamentous Hemagglutinin from <i>B.pertusis</i> |
| Feline Herpes         | Human Prainfluenza          | Loucocyctosis Promoting Factor Hemagglutin       |



Cellufine Sulfate can perform purification of a virus efficiently.

Like the typical example shown in Figure 1, purification of a virus can be performed in three steps; loading, washing, and elution. It is an excellent alternative to sucrose gradient centrifugation or other complicated operations.

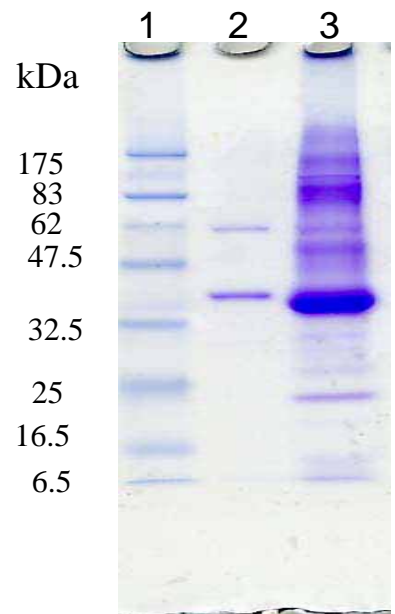
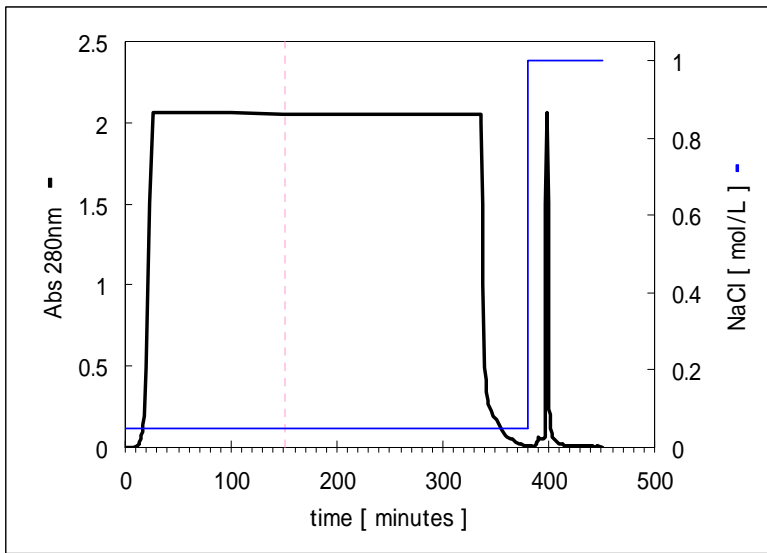
Fig 1. Purification of Rabies virus from chick embryo tissue culture fluid on Cellufine Sulfate

Column : I.D.50mm-bead height 70mm  
 Starting/washing : 0.01M PB,pH7.2  
 Elution buffer : 0.01M PB,pH7.2 +1M NaCl

# Cellufine Sulfate

## For blood coagulation factor

Cellufine Sulfate is applicable to purification of a blood coagulation factors. Separation by Cellufine Sulfate of Prethrombin produced by the CHO cell culture is shown in Figure 1. Other blood coagulation factors purified by Cellufine Sulfate include recombinant Factor IX<sup>4</sup>) and Factor X/Xa<sup>5</sup>).



**Fig2. Purification of Recombinant Prethrombin**

|   |                                 |
|---|---------------------------------|
| Sample: Culture medium 15L                                    | Media: Cellufine Sulfate        |
| Column: 90 × 345mm  | Flow rate : 100ml/min (94cm/hr) |
| Adsorption and Washing buffer: 50mM Tris-HCl,0.05M NaCl,pH8.0 |                                 |
| Elution buffer: 50mM Tris-HCl,1M NaCl,pH8.0                   |                                 |

SDS-PAGE  
 1:Molecular weight makers  
 2:Thrombin  
 3:Cellufine Sulfate elution

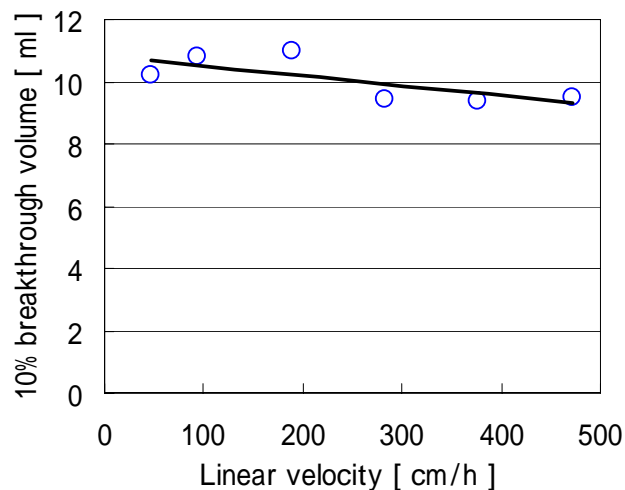
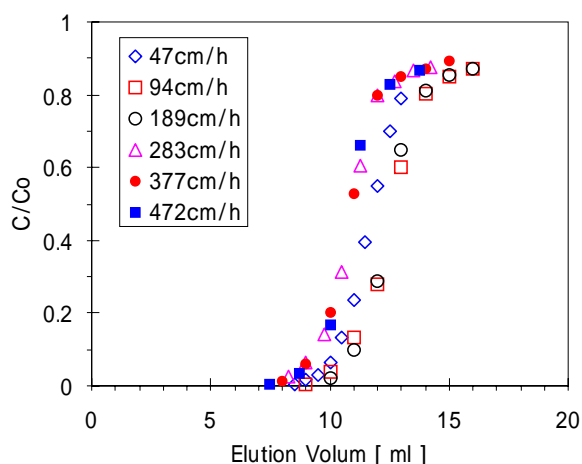
## Other proteins

By the affinity interactions similar to heparin, Cellufine Sulfate can purify GAG related enzyme, Growth factors, Follistatin, and Activin, etc. Please look at the list of references.

# Cellufine Sulfate

## Dynamic Binding Capacity ( DBC )

Cellufine Sulfate has a unique performance advantage. Its DBC hardly changes with increasing flow rates.



**Fig 3. Binding capacity of Lysozyme on a 1mL Cellufine Sulfate Mini-Column at various flow rates.**

**Fig 4. Flow rate vs Lysozyme Binding Capacity at 10% breakthrough volume**

Sample: Lysozyme (1mg/ml)      Media: Cellufine Sulfate      Column: Cellufine Mini-Column Sulfate,1ml (I.D.0.9cm-h1.6cm)  
 Adsorption buffer: 0.01M sodium phosphate ,pH7.0      Elution buffer: 0.01M sodium phosphate,pH7.0+0.6M NaCl

The unique DBC character of Cellufine Sulfate is reported by S.Yamamoto , E.Miyagawa<sup>6</sup>). The reference shows Dynamic Binding Capacity of  $\gamma$ -Globulin and Lysozyme by Cellufine Sulfate did not depend on the flow rate.

# Cellufine Sulfate

## references

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