

# Vivapure

Ion Exchange Protein purification products

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## All you need for rapid protein purification in one convenient kit

### **Vivapure™ IEX kits will dramatically change the way you isolate and purify proteins.**

Vivapure IEX protein purification kits employ an innovative and powerful ion exchange membrane technology for purification of proteins. Vivapure IEX purification protocols allow the isolation of pure proteins with high yield in less than 30 minutes.

#### **Rapid**

Vivapure IEX spin columns replace time-consuming and tedious column chromatography for many protein applications. The rapid 1-2-3 bind-wash-elute protocol is further enhanced by the introduction of ready-to-use kits containing the necessary buffers for even more rapid protein preps.

#### **User friendly**

Vivapure IEX kits include everything required for rapid purification of protein samples or contaminant removal from protein samples: clarification spin columns for initial sample clearing, Vivapure spin columns and ready-to-use buffers in different concentrations for the protein bind-wash-elute steps, and Vivaspin™ ultrafiltration devices for final sample concentration and desalting.

#### **High purity sample**

The protein sample purified using Vivapure kits can be used in downstream applications as Western blotting, X-ray crystallography and NMR spectroscopy. Further more, Vivapure kits can be utilized for proteomics application as sample fraction prior to 1D and 2D SDS-PAGE and iso-electric focusing.



Vivapure kits available	Application
Acidic Protein Purification Kit Q Mini H	Purification/fractionation of acidic proteins
Acidic Protein Purification Kit Q Maxi H	100 µl-19 ml sample volumes
Basic Protein Purification Kit S Mini H	Purification/fractionation of basic proteins
Basic Protein Purification Kit S Maxi H	100 µl-19 ml sample volumes
DNA Removal Kit D Mini M	Removal of bacterial DNA from proteins e.g. from <i>E.coli</i> cell lysates
DNA Removal Kit D Maxi M	



## About Vivapure technology

The Vivapure range represents innovative Vivascience protein purification products on the basis of membrane adsorber technology as the chromatography matrix.

The porous membrane adsorber matrix enables fast, reproducible and scalable protein purification.

### The Vivapure advantage

- Fast
- Cost effective
- Centrifuge based
- Easy to use
- Parallel processing
- Reproducible
- Available in a range of different membrane chemistries (e.g: range of strong or weak ion exchanges, metal chelate, Protein A, epoxy).

### Vivapure ion exchange products

Vivapure ion exchange spin columns are available as ready-to-use kits and as stand alone devices. The wide volume and capacity range meets every need from initial screening to preparative protein purification.

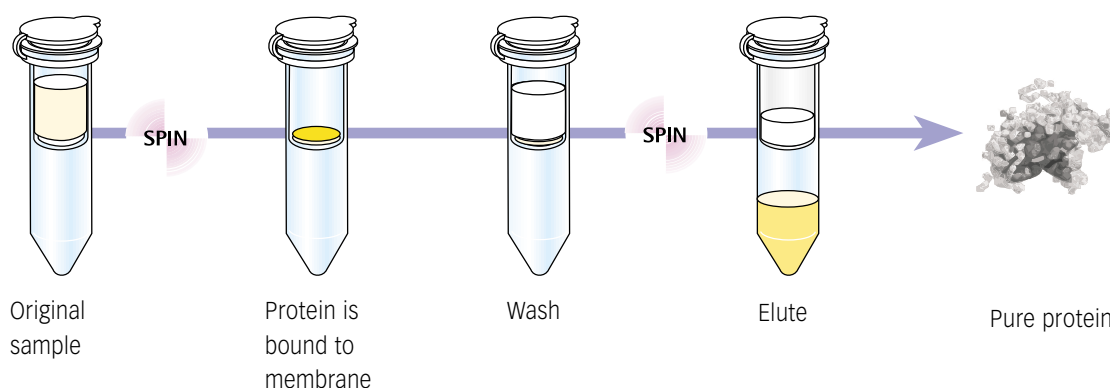


- Available in a range of strong or weak cation and anion exchange membranes
- Binding capacities ranging from 20 µg to 230 mg
- Volume capacities ranging from 0.4 ml to 70 ml
- Comprehensive instruction handbook and laminated protocol card in every box

### Typical Applications

- Fractionation prior to further analysis e.g. 2D gels
- Scouting purification conditions for new protein preparation protocols
- Endotoxin removal
- Polishing His-tagged proteins after metal chelate chromatography
- Purification and concentration of proteins
- Removal of heme moiety from heme containing proteins

Detailed application notes are available on our website:  
[www.vivascience.com](http://www.vivascience.com)



## Vivapure Acidic Protein Purification Kits

Vivapure acidic protein purification kits include everything required for the rapid purification of acidic ( $pI < 7$ ) proteins: clarification spin columns for initial sample clearance, Vivapure Q spin columns for the bind-wash-elute steps, Vivaspin ultrafiltration devices for final sample concentration and desalting.

The acidic protein purification kit buffer system combines the convenience of ready-to-use buffers with the flexibility of optimising buffers for the application. Preparing a buffer with the optimal salt concentration is easily performed using the dilution table included on the laminated protocol card.

If the protein iso-electric point ( $pI$ ) is unknown, the Vivapure Mini Starter Kit (Cat. No. VS-0IX01ST16) can be used to rapidly screen the target protein against different loading and elution conditions and membrane types to determine the  $pI$  range of the protein of interest.



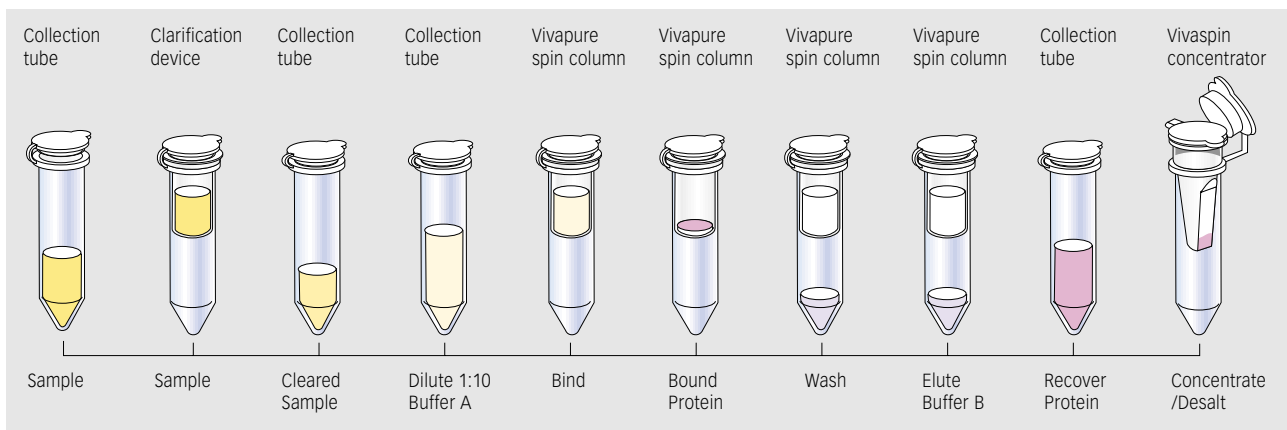
One Vivapure Q Mini acidic spin column will bind approximately 4 mg of protein.



One Vivapure Q Maxi acidic spin column will bind approximately 60-80 mg of protein.

Acidic Protein Purification Kit Q Mini H	
Cat. No. VS-IX01QHGP	
Vivapure Q Mini H spin columns	8
Clarification spin columns	8
Vivaspin 500 10 kDa MWCO	8
Collection tubes (2 ml)	32
Buffer A-Q	100 ml
Buffer B-Q	25 ml
Vivapure Handbook	1
Laminated Protocol Card	1

Acidic Protein Purification Kit Q Maxi H	
Cat. No. VS-IX20QHGP	
Vivapure Q Maxi H spin columns	4
Clarification spin columns	4
Vivaspin 20 10 kDa MWCO	4
Collection tubes (50 ml)	16
Buffer A-Q (10x concentrate)	100 ml
Buffer B-Q	100 ml
Vivapure Handbook	1
Laminated Protocol Card	1



# Vivapure Basic Protein Purification Kits

Vivapure basic protein purification kits include everything required for the rapid purification of basic ( $pI > 7$ ) proteins: clarification spin columns for initial sample clearance, Vivapure S spin columns for the bind-wash-elute steps, Vivaspin ultrafiltration devices for final sample concentration and desalting.

The basic protein purification kit buffer system combines the convenience of ready-to-use buffers with the flexibility of optimising buffers for the application. Preparing a buffer with the optimal salt concentration is easily performed using the dilution table included on the laminated protocol card.

If the protein iso-electric point ( $pI$ ) is unknown, the Vivapure Mini Starter Kit (Cat. No. VS-0IX01ST16) can be used to rapidly screen the target protein against different loading and elution conditions and membrane types to determine the  $pI$  range of the protein of interest.



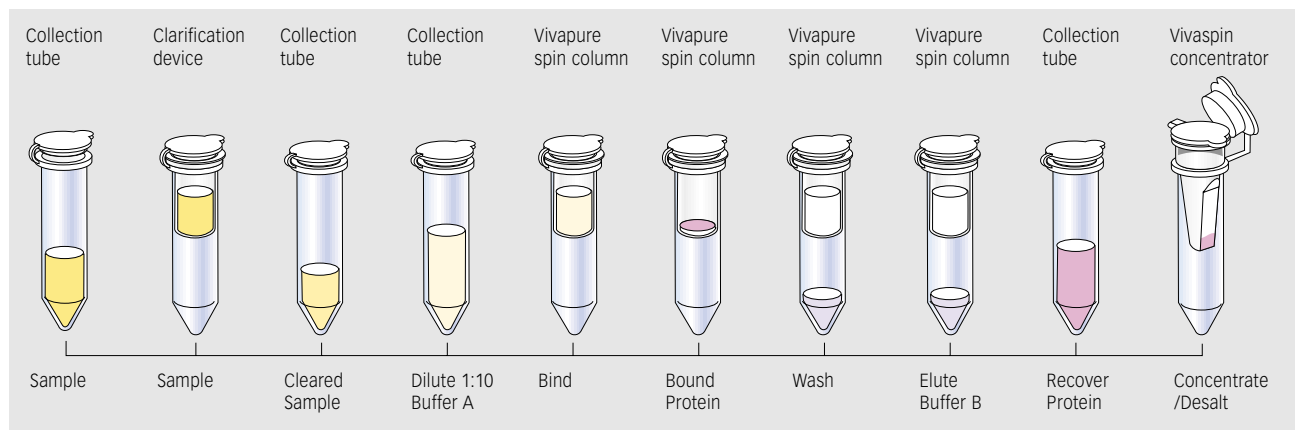
One Vivapure S Mini Basic spin column will bind approximately 4 mg of protein.



One Vivapure S Maxi Basic spin column will bind approximately 60-80 mg of protein.

Basic Protein Purification Kit S Mini H	
Cat. No. VS-IX01SHGP	
Vivapure S Mini H spin columns	8
Clarification spin columns	8
Vivaspin 500 10 kDa MWCO	8
Collection tubes (2 ml)	32
Buffer A-S	100 ml
Buffer B-S	25 ml
Vivapure Handbook	1
Laminated Protocol Card	1

Basic Protein Purification Kit S Maxi H	
Cat. No. VS-IX20SHGP	
Vivapure S Maxi H spin columns	4
Clarification spin columns	4
Vivaspin 20 10k Da MWCO	4
Collection tubes (50 ml)	16
Buffer A-S (10x concentrate)	100 ml
Buffer B-S	100 ml
Vivapure Handbook	1
Laminated Protocol Card	1



## Vivapure DNA Removal Kits

The purification of protein from many biological tissues is often hampered by the presence of high molecular weight nucleic acids. The type of nucleic acid molecules present in the tissue/cells depends upon the species from which it originated. Therefore, there may be genomic DNA from mammalian or plant tissues and cells and plasmid DNA from lysis of bacteria used for the expression of novel genes. This is a fundamental technique in molecular biology and the most commonly used host organism is *Escherichia coli*. This versatile bacterium will support many well-characterised plasmid cloning vectors. The isolation of expressed proteins from *E. coli* and their separation from bacterial nucleic acids is therefore a routine task.

The expressed protein should be free of contamination from the host cell's chromosomal DNA and other constituents of the host cell. The Vivapure DNA removal kit contains Vivapure D spin columns, buffers and devices required to remove DNA from any source of biological material used for protein purification. The kit is easy to use and gives rapid and efficient results.



One Vivapure D Mini DNA removal column will bind approximately 0.8 mg of DNA.



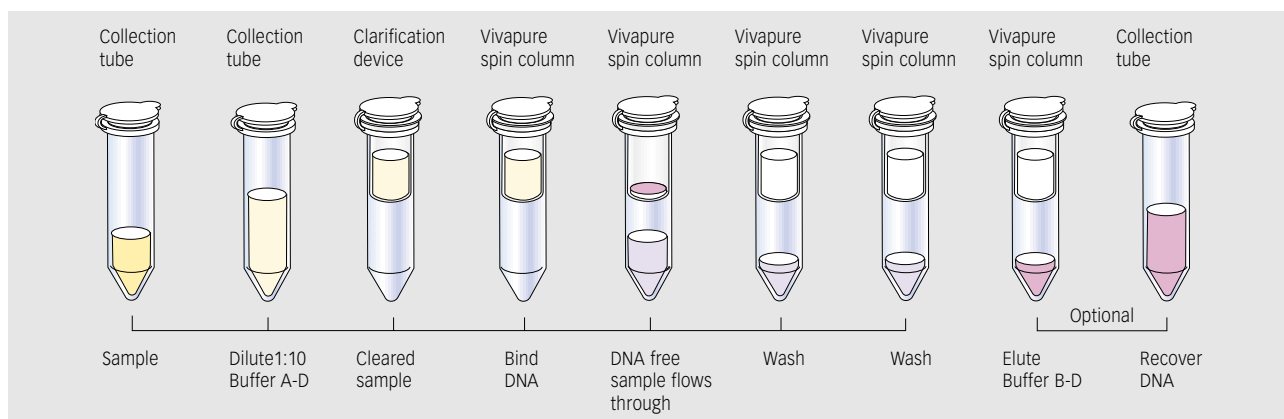
One Vivapure D Maxi DNA removal column will bind approximately 4 mg of DNA.

### DNA Removal Kit D Mini M

Cat. No. VS-IX01DMDR	
Vivapure D Mini M spin columns	12
Clarification spin columns	12
Collection tubes (2 ml)	36
DNA buffer A-D	25 ml
DNA buffer B-D	25 ml
General Vivapure handbook	1
Laminated protocol card	1
DNA removal handbook	1

### DNA Removal Kit D Maxi M

Cat. No. VS-IX20DMDR	
Vivapure D Maxi M spin columns	6
Clarification spin columns	6
Collection tubes (50 ml)	18
DNA buffer A-D	100 ml
DNA buffer B-D	100 ml
General Vivapure handbook	1
Laminated protocol card	1
DNA removal handbook	1



## Vivapure IEX spin columns - Applications

1. Fractionation of complex protein lysates with IEX-membrane spin columns improves resolution of 2-D PAGE.

*Perkin Elmer, Boston (USA) Mary Lopez et al., American Biotechnology Laboratory*

2. A simple, fast and reliable method using Vivapure Q Mini for removing highly charged contaminant from samples prior to 2D-PAGE e.g. proteoglycans from cartilage explant.

*Roche, Palo Alto, USA*

3. Vivapure centrifugal anion exchangers were used to remove endotoxin from research grade monoclonal antibody solutions easily with high protein recovery.

*Cambridge Antibody Technology, Cambridge UK B. Fish et al., Drug Discovery 3 (2003) 26-27*

4. A simple and reliable protocol for the separation of Tween 20 treated soluble Guanylate cyclase from detergent and free porphyrin is described using Vivapure Mini Q for routine use.

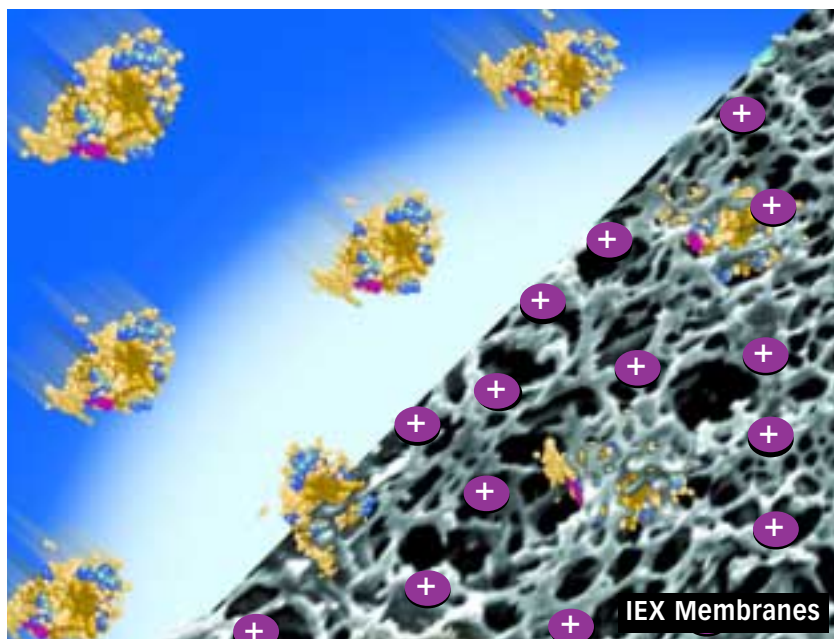
*Bayer Ag Wuppertal, Germany P. Schmidt et al., Protein Expression and Purification 31 (2003) 42-46*

5. Application of Vivapure S centrifugal ion-exchange membrane devices for the purification / polishing of His-tagged proteins for crystallization.

*Birkbeck College, University of London, UK.*

6. Purification of caspase-14 using Vivapure Mini H D anion exchange spin columns for functional analysis.

*Department of Medicine, University of Washington, Seattle, USA Andy J. Chien et al., Biochem. And Biophys. Research Communications 296 (2002) 911-9177.*



Functional groups:	Ion exchanger type:
Sulphonic acid (S)	Strong acidic cation exchanger: $R-CH_2-SO_3^-Na^+$
Quaternary ammonium (Q)	Strong basic anion exchanger: $R-CH_2-N^+-(CH_3)_3Cl^-$
Carboxylic acid (C)	Weak acidic cation exchanger: $R-COO^-$
Diethylamine (D)	Weak basic anion exchanger: $R-CH_2-NH\equiv(CH_2H_5)_2$

Application
Fractionation of protein mixtures prior to 2D-PAGE
Sample preparation prior to 1-D or 2-D PAGE
Removal of endotoxins from monoclonal antibodies
Preparation of heme moiety from heme containing protein for functional analysis
Polishing of His-tagged proteins
General protein purification
Detergent removal from protein solutions
Purification of antibodies from serum, ascites or tissue culture supernatant
Establishing a purification/prepurification protocol for a given protein
HPLC/FPLC sample preparation
Purification of membrane-bound proteins

7. Rapid removal of the detergent, n-octyl beta-D-glucopyranoside from a membrane protein mimic using an innovative centrifugal anion exchange membrane technology.  
*University of Cambridge, UK.*

8. Purification of monoclonal antibodies from high cell density (MiniPERM) tissue culture supernatant using Vivapure centrifugal ion exchange membrane devices.  
*University of Bochum, Germany.*

Available in detail on our website: [www.vivascience.com](http://www.vivascience.com)

## Ordering Information

Cat Number	Vivapure Kits	Spin Columns	Cat Number	Vivapure Maxi Spin Columns	Spin Columns	Centrifuge Tubes
VS-IX01QHGP	Acidic Protein Purification Kit Q Mini H	8	VS-IX20CM08	Vivapure C Maxi M	8	16
VS-IX20QHGP	Acidic Protein Purification Kit Q Maxi H	4	VS-IX20CH08	Vivapure C Maxi H	8	16
VS-IX01SHGP	Basic Protein Purification Kit S Mini H	8	VS-IX20DM08	Vivapure D Maxi M	8	16
VS-IX20SHGP	Basic Protein Purification Kit S Maxi H	4	VS-IX20DH08	Vivapure D Maxi H	8	16
VS-IX01DMDR	DNA Removal Kit D Mini M	12	VS-IX20QM08	Vivapure Q Maxi M	8	16
VS-IX20DMDR	DNA Removal Kit D Maxi M	6	VS-IX20QH08	Vivapure Q Maxi H	8	16
<b>Kit Accessories</b>			VS-IX20SM08	Vivapure S Maxi M	8	16
VS0101	Vivaspin 500 10,000 MWCO for Mini DNA Kit	25	VS-IX20SH08	Vivapure S Maxi H	8	16
VS0102	Vivaspin 500 10,000 MWCO for Mini DNA Kit	100	<b>Vivapure Mega Spin Columns</b>			
VS2001	Vivaspin 20 10,000 MWCO for Maxi DNA Kit	12	VS-IX75QH02	Vivapure Q Mega H	2	2
VS2002	Vivaspin 20 10,000 MWCO for Maxi DNA Kit	48	VS-IX75DH02	Vivapure D Mega H	2	2
			VS-IX75SH02	Vivapure S Mega H	2	2
			VS-IX75CH02	Vivapure C Mega H	2	2
			<b>Vivapure Mega Accessories</b>			<b>Quantity</b>
<b>Cat Number</b>	<b>Vivapure Mini Spin Columns</b>	<b>Spin Columns</b>	<b>Centrifuge Tubes</b>			
VS-IX01ST16	Vivapure Mini H Starter Kit (4 of each ion exchange class)	16	32	VS-IXA01	Vivapure Mega pressure cap with 2 santoprene seals	1
VS-IX01CL24	Vivapure C Mini L	24	48	VS-IXA02	Santoprene seals for Vivapure Mega	5
VS-IX01CM24	Vivapure C Mini M	24	48	VSA003	250 ml centrifuge bottles with standard lids	4
VS-IX01CH24	Vivapure C Mini H	24	48	<b>Accessories for Air Pressure Mode</b>		
VS-IX01DL24	Vivapure D Mini L	24	48	VCA002	Air Pressure Controller (APC)	1
VS-IX01DM24	Vivapure D Mini M	24	48	VCA010	Female coupling	1
VS-IX01DH24	Vivapure D Mini H	24	48	VCA011	Male coupling	1
VS-IX01QL24	Vivapure Q Mini L	24	48	VCA012	4mm outer diameter pressure tubing (3 m)	1
VS-IX01QM24	Vivapure Q Mini M	24	48			
VS-IX01QH24	Vivapure Q Mini H	24	48			
VS-IX01SL24	Vivapure S Mini L	24	48			
VS-IX01SM24	Vivapure S Mini M	24	48			
VS-IX01SH24	Vivapure S Mini H	24	48			



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