

Product survey: Protein Purification Kits

Mop Bucket Kits for Proteins

Purifying proteins directly from microorganisms, cultured cells, tissues or other sources is rather nerve-racking. Since the advent of recombinant proteins and commercial kits, however, protein purification has lost its sting.

Starting with crude extracts of lysed cells, researchers may choose from a handful of classical separation techniques, primarily based on column chromatography, to purify their protein of interest. Depending on the properties of the protein, the purification strategy is usually based on precipitation with ammonium sulphate, size exclusion chromatography, ion exchange chromatography, affinity chromatography and hydrophobic interaction or reverse phase chromatography.

Applying individual chromatographic steps during protein purification is quite easy; the tricky part is to combine them in the right order and to choose the optimal conditions to get high yields of active protein in a short time.

Affinity approach

To avoid messing around with the pitfalls of laborious chromatographic steps and to simplify protein purification, many researchers express their protein of interest in a proper host, whenever possible, and use commercially available purification kits to extract the recombinant protein. Most purification kits use an affinity chromatography approach: the recombinant protein is expressed with a short tag at its N or C terminal end that strongly binds to a specific ligand immobilised on the surface of the column material. Theoretically, only the tagged protein molecules attach to the resin and may be recovered after a brief washing step, while all other proteins quickly pass through the column.

The most widely used purification method applying tagged proteins is immobilised metal affinity chromatography (IMAC) that has been around for more than 30 years. IMAC is based on the coordination chemistry of Ni^{2+} -cations, which form strong octahedral chelate complexes with polydentate ligands, such as nitrilotriacetic acid (NTA). Since NTA is a fourdentate ligand, two corners of the coordination oc-

taeder may be occupied by additional monodentate ligands e.g., water or histidine originating from a His-tag.

Immobilised Complex

The trick with IMAC is to anchor NTA on an agarose resin, which immobilises Ni^{2+} -cations added in the first step of IMAC via chelate complexes. In the second step, the Ni^{2+} -NTA columns are loaded with cell extracts containing the recombinant His-tagged protein. The latter binds to the Ni^{2+} -NTA complex and may be eluted from the resin (after an additional washing step) by reducing the pH and increasing the ionic strength or by simply adding the competitive counterligand imidazol. Since Porath *et al.* (*Nature* 258, 598-99) introduced metal chelate affinity chromatography in 1975, researchers have developed several IMAC variations that slightly differ in bead material, metal ion, chelators or affinity tags. Some IMAC kits use, for example, iminodiacetic acid or tris(carboxymethyl)ethylendiamin as chelators, instead of NTA, and agarose beads may be substituted by silica resins.

Be creative

The continuing or even increasing popularity of IMAC may be attributed to its flexibility – it can be used in small cartridges, in HPLC columns or in batch format – its ease of use and high separation efficiency. Last but not least, however, commercial IMAC kits can also be applied in a creative way to modify or improve common protein purification strategies. One such example is presented by Matthew Bogoy's group from the Stanford School of Medicine in a recent *PLoS One* paper (Shen *et al.* (2009), 4(12), e8119) describing a new purification method based on an inducible autocleaving protease tag. Sounds complicated, however, the method is as brilliant as it is simple.

Instead of just connecting a His6-tag to the recombinant protein of interest, Bo-

gyo's people initially fused the His6-tag to the CPD-domain of *Vibrio cholerae* MARTX toxin and subsequently attached the His6-CPD fusion to the C-terminal end of the target protein. As stated by Shen *et al.*, the CPD-domain has two very interesting properties that make it a perfect choice for a fusion tag: "Firstly, the CPD is a highly specific protease that cleaves exclusively after Leu-residues. Secondly, the CPD is inducible, as it is specifically activated by inositol hexakisphosphate (InsP_6).” By engineering a Leu-cleavage site into the linker between target protein and CPD-His6 fusion, Shen *et al.* created an inducible auto processing enzyme tag.

Three simple steps

Protein purification with the CPD-fusion system follows a simple three-step process. In the first step, the target protein-CPD-His6 fusion protein binds to a common Ni^{2+} -NTA resin. InsP_6 is added in the second step to induce autocleavage at the Leu-cleavage site and the released target protein is finally isolated from the supernatant in the third step, while the CPD-His6 tag remains on the Ni^{2+} -NTA beads.

Purification with the Bogoy system kills two birds with one stone. According to the authors, the CPD-His-tag increases the solubility and expression of target proteins and simultaneously facilitates rapid purification and tag removal. What more could you want?

HARALD ZÄHRINGER



Protein Purification Kits

Company/Distributor	Name of Product	Applications	Size/Volume	Miscellaneous, Specialities, Generally	Price [EUR]
5 Prime Hamburg, Germany www.5PRIME.com Contact: J. Tesdorpf Phone +49-40 3197927-0 info@5prime.com	PerfectPro Ni-NTA Agarose	Purification of 6 x His-tagged proteins in native or denatured form	10 ml / 25 ml / 100 ml / 500 ml	<ul style="list-style-type: none"> ■ Binding capacity up to 50 mg protein/ml resin ■ Strong interaction enable stringent washes ■ Purification under native or denaturing conditions 	94.- / 232.- / 811.- (500 ml, on request)
	PerfectPro Ni-NTA Superflow	See above / Suitable for FPLC and scale-up	10 ml / 25 ml / 100 ml / 500 ml	<ul style="list-style-type: none"> ■ See above ■ High maximum pressure ■ High linear flow rates 	114.- / 279.- / 976.- (500 ml, on request)
	PerfectPro Ni-NTA MagBeads	See above / Suitable for high throughput purification at microgram scale e.g., for screening	2 x 1 ml 5% suspension 6 x 1 ml 5% suspension	<ul style="list-style-type: none"> ■ Binding capacity up to 2 µg/µl suspension ■ Easy to automate ■ Stringent washes ■ Purification under native or denaturing conditions 	134.- 366.-
	Ni-NTA HisPrime Strips and Plates	Direct use of 6 x His-tagged proteins for ELISA, activity and interaction assays	Strips 24 x 8 = 192 assays; Plates transparent 5 x 96 = 480 assays; Plates white 5 x 96 = 480 assays	<ul style="list-style-type: none"> ■ High sensitivity ■ High selective binding ■ Rapid and easy procedure 	85.- 155.- 153.-
AMS Biotechnology (Europe) www.amsbio.com Contact: Peter Rettenberger Phone +49-69 779 099	Mammalian Cell Protein Extraction Reagent	Mammalian cells	100 ml	--	65.-
	Eco Buster Protein extraction solution for <i>E. Coli</i> expression (large protein)	Bacterial	100 ml 500 ml	<ul style="list-style-type: none"> ■ Extraction of active protein from <i>E. Coli</i> without mechanical lysis 	75.- 315.-
	Eco Buster Protein extraction solution for <i>E. Coli</i> expression (small protein)	Bacterial	100 ml 500 ml	<ul style="list-style-type: none"> ■ See above 	80.- 330.-
	Total Protein Extraction Kit	--	1 kit	<ul style="list-style-type: none"> ■ Total protein isolated by this kit is native and can be used for downstream applications 	255.-
	CNM Compartmental Protein Extraction Kit	--	1 kit	<ul style="list-style-type: none"> ■ Five reagents enough to enrich four compartmental proteins from 5 grams of tissues or cells 	290.-
	CNMCS Compartmental Protein Extraction Kit	--	1 kit	<ul style="list-style-type: none"> ■ See above 	350.-
	Membrane Protein Extraction Kit	--	1 kit	<ul style="list-style-type: none"> ■ Extraction of membrane protein from mammalian tissue and cells 	265.-
	SoluLyse Bacterial Protein Extraction Reagent	--	125 ml 500 ml	<ul style="list-style-type: none"> ■ Perforation of bacterial cell wall without denaturing proteins ■ No need for secondary treatment such as sonication or freeze-thaw 	110.- 260.-
	SoluLyse Bacterial Protein Extraction Reagent (Tris Buffer)	--	125 ml 500 ml	<ul style="list-style-type: none"> ■ See above 	110.- 260.-
	SoluLyse-M Protein Extraction Reagent	--	125 ml 500 ml	<ul style="list-style-type: none"> ■ Allows perforation of bacterial cell wall without denaturing proteins ■ No need for secondary treatment such as sonication or freeze-thaw 	110.- 260.-
	SERVA BluePrep 3 in 1 Purification Kit	--	20 preps	<ul style="list-style-type: none"> ■ Isolation and purification of total RNA, genomic DNA and proteins sequentially from a single sample 	330.-
	SERVA BluePrep 2 in 1 Purification Kit	--	20 preps	<ul style="list-style-type: none"> ■ Isolation and purification of total RNA and proteins simultaneously from a single sample 	295.-
SERVA BluePrep 4 in 1 Purification Kit	--	20 preps	<ul style="list-style-type: none"> ■ Isolation and purification of total RNA including microRNA, genomic DNA and proteins sequentially from a single sample 	400.-	
BioCat Heidelberg, Germany www.biocat.com Contact: Elke Gamer Phone +49-6221-7141516 gamer@biocat.com	Total Protein Extraction Kit	Purification and preparation of native and intact proteins from tissues	For 5 g tissue	<ul style="list-style-type: none"> ■ Protein isolation from large samples ■ Rapid protocol ■ Intact proteins of > 200 kDa can be isolated ■ Isolated proteins can be used for downstream applications 	335.-
	Mammalian Cell Extraction Kit	Extraction of mammalian proteins from cultured cells and tissue samples, under non-denaturing conditions	For 2 x 10 ⁸ cells	<ul style="list-style-type: none"> ■ Entire procedure takes < 20 minutes ■ Cell lysate prepared can be used in a variety of applications 	220.-

Protein Purification Kits					
Company/Distributor	Name of Product	Applications	Size/Volume	Miscellaneous, Specialities, Generally	Price [EUR]
BioCat (continued)	CNMCS and CNM Compartment Protein Isolation Kits	Sequential isolation of cytoplasmic, nuclear, membrane, (and cytoskeletal proteins) from tissues and cells	For 5 g tissue or 10 ⁸ cells	<ul style="list-style-type: none"> ■ Separation of high-quality subcellular proteome fractions ■ No differential centrifugation ■ Isolation of four or three compartmental proteins in < 3 hours 	445.- (CNMCS Kit) 387.- (CNM Kit)
	Mitochondria Isolation Kit	Isolation of mitochondria or sequential isolation of a mitochondrial, a cytosolic, and a nuclear protein fraction from tissues and cells	100 reactions	<ul style="list-style-type: none"> ■ Reproducible isolation of high-quality mitochondria ■ High yield of intact and enzymatically active mitochondria ■ Procedure can be performed within an hour 	275.-
	Nuclear Extraction Kit	Extraction of functional crude nuclear proteins from various cell types and tissues	20 reactions (cells)/ 10 reactions (tissue)	<ul style="list-style-type: none"> ■ Nuclear extracts can be used for various applications including protein/DNA arrays and EMSA 	189.-
	Fraction-PREP Cell Fractionation Kits	Isolation of cytosolic, nuclear, membrane, and cytoskeletal proteins or mitochondrial and cytosolic proteins or nuclear and cytosolic proteins or membrane proteins from mammalian cells	50 or 100 reactions, depending on kit	<ul style="list-style-type: none"> ■ Preparation of highly enriched and intact cellular fractions ■ High yield and high purity ■ Simple procedure 	Depending on kit and pack size
	ProteSpin Abundant Serum Protein Depletion Kit	Effective depletion of major serum proteins including albumin, alpha-antitrypsin, transferrin and haptoglobin from serum and plasma samples	25 reactions (depletion of up to 500 µg of serum proteins)	<ul style="list-style-type: none"> ■ Depletion of 70% of albumin, 90% of alpha-antitrypsin, and 50% of transferrin and haptoglobin ■ Process up to 10 samples in less than 30 minutes ■ Does not rely on antibodies ■ Anion exchange mechanism 	225.-
	ProteSpin On-Column Proteolytic Digestion Kit	Trypsin digestion of protein samples and subsequent purification of the resulting peptides	25 reactions (up to 15 µg protein each)	<ul style="list-style-type: none"> ■ Peptides generated are complete, with no additional artifacts being detected in mass spectrometry ■ Fast and simple procedure for the generation of purified peptides 	225.-
	ProteSpin Detergent Clean-Up Kit	Removal of detergents from protein samples	Micro Kit (2-50 µg protein): 25 or 50 reactions; Maxi Kit (up to 8 mg protein): 4 reactions	<ul style="list-style-type: none"> ■ Suitable for basic and acidic proteins ■ > 95% recovery ■ Useable with a variety of detergents incl. SDS, Triton X-100, CHAPS, NP-40, Tween 20 	225.- (Micro Kit, 25 rxns) 398.- (50 rxns) 179.- (Maxi Kit)
	ProteSpin Concentration, Buffer Exchange, and Desalting Kit (CBED)	Concentration, buffer exchange and desalting of protein samples	Micro Kit (2-50 µg protein): 25 or 50 reactions; Maxi Kit (up to 8 mg protein): 4 reactions	<ul style="list-style-type: none"> ■ Suitable for basic and acidic proteins ■ No molecular weight cut-off ■ Special version for concentration of urine proteins also available 	225.- (Micro Kit, 25 rxns) 398.- (50 rxns) 179.- (Maxi Kit)
	ProteSpin Endotoxin Removal Kit	Removal of endotoxins from protein samples	Micro Kit (up to 150 µg protein): 20 reactions; Maxi Kit (up to 4 mg protein): 4 reactions	<ul style="list-style-type: none"> ■ Reduction of endotoxin level to < 0.01 EU/µg protein ■ > 95% recovery ■ Multiple samples can be processed in 20 to 30 min ■ No further clean-up of protein samples required 	249.- (Micro Kit) 189.- (Maxi Kit)
	ProteSpin Inclusion Body Isolation Kit	Rapid purification of recombinant proteins expressed in inclusion bodies	Micro Kit (up to 50 µg protein): 20 or 50 reactions; Maxi Kit (up to 12 mg protein): 4 reactions	<ul style="list-style-type: none"> ■ Three kits in one for acidic and basic proteins ■ Gentle disruption procedure provides high purity final product ■ Fast process time 	240.- (Micro Kit, 20 rxns) 425.- (50 rxns) 187.- (Maxi Kit)
Chemagen Baesweiler, Germany www.protein-purification.com Contact: Phone +49(0)2401-805500 info@chemagen.com	chemagic Flow Sep 15	Bio-Production and Bio-Separation	Capacity: 15 l/h	<ul style="list-style-type: none"> ■ Direct protein isolation from starting media containing solids ■ Simple, automated execution ■ Process time of less than one hour ■ Flexible ■ Automated system for preparative large scale protein purification with Magnetic Beads 	On request
	chemagic Flow Sep 60	See above	Capacity: 60 l/h	<ul style="list-style-type: none"> ■ See above 	On request
Takara Bio Europe Clontech Saint Germain-en-Laye, France www.clontech.com Contact: Phone UK: 0808 234 8063 Austria: 0800 296 141 CH: 0800 563 629 Germany: 0800 182 5178 tech@clontech-europe.com	HisTALON Cartridge & Gravity Columns Purification Kits	Kits for extraction and purification of recombinant his-tagged protein - Cobalt-based resins	20 purifications	<ul style="list-style-type: none"> ■ Easy-to-use prepacked FPLC cartridges and gravity columns ■ Automated or syringe-based protocols ■ Superior purity & high yields with TALON Resin ■ Over 2,400 peer-reviewed publications using TALON resin 	On request
	His60 Ni Gravity Column Purification Kit	Kits for extraction and purification of recombinant his-tagged protein - Nickel-based resins	20 purifications	<ul style="list-style-type: none"> ■ Up to 60 mg/ml of recombinant his-tagged protein ■ Low metal ion leakage in eluted his-tagged protein ■ For purification under native or denaturing conditions ■ Use for batch/gravity flow and automated FPLC purification 	On request
	GST Purification Kit	Kit for purification of GST-tagged proteins	5 purifications	--	On request

Protein Purification Kits

Company/Distributor	Name of Product	Applications	Size/Volume	Miscellaneous, Specialities, Generally	Price [EUR]
Takara (continued)	TALON PMAC Magnetic Phosphoprotein Enrichment Kit	Kit for purification/enrichment of phosphoproteins	each	<ul style="list-style-type: none"> ■ Quick and easy enrichment from any cell or tissue sample ■ Nondenaturing protocol maintains protein conformation and solubility ■ Eluted samples ideal for small volume applications 	On request
	Phosphoprotein Enrichment Kit	Mass spectrometry sample prep, analysis of phosphorylation, 2D-page sample prep	6 purifications	<ul style="list-style-type: none"> ■ Non-denaturing protocol maintains protein conformation and solubility ■ Ideal for use with many downstream applications ■ Increase the sensitivity of your phosphodetection experiments 	On request
	Magnetic Phosphopeptide Enrichment Kit	Enriching phosphorylated peptides from a mixture of phosphorylated and nonphosphorylated peptides	each	<ul style="list-style-type: none"> ■ Rapid enrichment of phosphopeptides ■ Optimized buffers eliminate nonspecific binding ■ Yields highly concentrated samples ideal for LC or MALDI analysis 	On request
	Phosphopeptide Enrichment Spin Columns & Enrichment Buffer Kit	Phosphopeptide enrichment	25 columns	<ul style="list-style-type: none"> ■ Convenient prepackaged columns ■ Enriches for any type of phosphopeptide ■ Obtain increased sensitivity in mass-spectroscopy analysis 	On request
	Glycoprotein Enrichment Resin	Glycoprotein enrichment (phenylboronic acid based)	10 ml	<ul style="list-style-type: none"> ■ Efficient, specific enrichment of glycoproteins. ■ Use with gravity flow or FPLC columns for better results in downstream applications ■ Fast and simple protocol 	On request
Fermentas St. Leon-Rot, Germany www.fermentas.com Contact: Anja Martin anja.martin@fermentas.de	ProteoJET Membrane Protein Extraction Kit	Isolation of membrane proteins from mammalian suspension and adherent cells	50 preps	<ul style="list-style-type: none"> ■ High quality fractionation ■ No cross-contamination ■ Compatible with downstream applications 	302.-
	ProteoJET Cytoplasmic and Nuclear Protein Extraction Kit	Preparation of native, functional cytoplasmic proteins and intact nuclei from cultured cells or tissue samples	50 preps	<ul style="list-style-type: none"> ■ Versatile ■ Fast procedure (<60 min) ■ No cross-contamination ■ Compatible with downstream applications 	87.-
	ProteoJET Mammalian Cell Lysis Reagent	Extraction of total protein from mammalian cultured cells or tissue samples	125-500 preps	<ul style="list-style-type: none"> ■ High yield of total protein ■ Ready-to-use formulation ■ No sonication and freeze-thaw-cycles ■ Extraction at room temperature 	117.-
GE Healthcare Uppsala, Sweden www.gelifsciences.com/sampleprep Contact: Helena Hedlund Phone +46-186121386 Helena.hedlund@ge.com	Protein A Mag Sepharose, Protein G Mag Sepharose	Enrichment of target proteins by immunoprecipitation	1 x 500 µl (20 reactions) 4 x 500 ml (80 reactions)	<ul style="list-style-type: none"> ■ Easier collection of low-abundance proteins 	112.- 435.-
	NHS Mag Sepharose	Enrichment of target protein by pull-down	1 x 500 µl (20 reactions) 4 x 500 ml (80 reactions)	<ul style="list-style-type: none"> ■ See above 	112.- 435.-
	TiO2 Mag Sepharose	Enrichment of phosphorylated peptides	1 x 500 µl (10 reactions) 4 x 500 ml (40 reactions)	<ul style="list-style-type: none"> ■ Easier collection of low-abundance tryptic digested phosphoproteins 	75.50 280.-
	Albumin & IgG Depletion SpinTrap, HiTrap Albumin & IgG Depletion	Depletion of albumin and IgG from human serum and plasma	10 x microspin columns, 2 x 1 ml HiTrap columns	<ul style="list-style-type: none"> ■ High depletion capacity ■ Simple and fast procedure 	408.- 608.-
	HisTrap FF crude Kit	Purification of histidine-tagged proteins directly from unclarified lysates using a syringe	3 x 1 ml HisTrap FF crude prepacked columns	<ul style="list-style-type: none"> ■ Simply sonicate and run ■ Detailed instructions and all necessary buffers for 10-12 purifications using a syringe 	Approx. 280.- to 340.-
	MABTrap Kit	Purification of monoclonal and polyclonal antibodies from ascites fluid, serum and cell culture supernatants	1 x 1 ml HiTrap Protein G HP prepacked column	<ul style="list-style-type: none"> ■ Convenient, reproducible and well-proven ■ Detailed instructions and all necessary buffers for 20 purifications using a syringe 	Approx. 270.- to 320.-
Hyglos Regensburg, Germany www.hyglos.de Contact: Christian Arzt Phone +49-941 942 62 29 christian.arzt@hyglos.de	EndoTrap blue EndoTrap red	Highly efficient endotoxin removal from e.g. proteins, DNA/RNA etc.	1 x 1 ml column, 5 x 1 ml column, 10 ml resin, 50 ml resin, bulk	<ul style="list-style-type: none"> ■ Not Polymyxin B based 	175.- (1 ml) 525.- (5 ml) 689.- (10 ml) 3,190.- (50 ml) bulk on request
	EndoTrap HD	Highly efficient endotoxin removal from e.g. proteins, DNA/RNA etc. for biopharmaceutical production processes	10 ml resin, 50 ml resin, 250 ml resin, bulk	<ul style="list-style-type: none"> ■ RSF, ligand leakage ELISA available ■ Not Polymyxin B based 	980.- (10 ml) 4,165.- (50) 15,600.- (250) bulk on request
	EndoTrap HD Leakage ELISA	Highly efficient endotoxin removal from e.g. proteins, DNA/RNA for biopharmaceutical production processes	--	<ul style="list-style-type: none"> ■ 12 x 8 well stripes, 1 vial POD-Antibody, 1 vial Standard, 20 ml ABTS Substrate, ready to use 	699.-

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IBA Goettingen, Germany www.iba-go.com Contact: Isabel Schuchardt Phone +49-(0)551-50672-0 info@iba-go.com	Strep-tag Starter Kit + pASK-IBA vector	Affinity purification of Strep-tag proteins based on the Strep-tag/Strep-Tactin system	1 Set sufficient for 8 applications	<ul style="list-style-type: none"> ■ Flexible system ■ Expression vectors can be obtained with 50% discount in combination with the Starter Kit ■ Free PrimerD'Signer Software facilitates primer design 	On request / Starter Kit with 50% discount
	Strep-tag Starter Kit 3C + pASK-IBA vector	Affinity purification of Strep-tag proteins based on the Strep-tag/Strep-Tactin system	1 Set sufficient for 8 applications	<ul style="list-style-type: none"> ■ See above ■ Three different columns offered allow the evaluation of the best resin for the purification of a certain protein 	On request / Starter Kit with 50% discount
	One-STREP Purification Kit	Affinity purification of One-Strep-tag proteins based on the One-Strep-tag/Strep-Tactin system / Especially suited for protein complex isolation	--	<ul style="list-style-type: none"> ■ Suited for purification of intact protein complexes in one step ■ Mild, physiological purification conditions ■ For <i>in vivo</i> protein:protein interaction studies ■ Sustains elevated detergent concentrations to reduce background ■ Further Kits for protein interaction studies available 	On request
Jena Bioscience Jena, Germany www.jenabioscience.com Contact: Buerk Schaefer Phone +49-3641-6285173 buerk.schaefer@jenabioscience.com	GST Cleavage Capture Kit	Removal of GST-affinity tag	Sufficient for cleavage of approximately 1 mg of fusion protein	<ul style="list-style-type: none"> ■ Efficient removal of GST ■ Digestion of a GST fusion protein containing a Factor Xa cleavage site and subsequent 1-step purification of protein of interest 	140.-
	GFP-Cap S	Green Fluorescent Protein (GFP) Capture from cellular extracts	10 reactions	<ul style="list-style-type: none"> ■ Immunoprecipitation of GFP-fusion proteins ■ GFP-Cap S is an affinity matrix that allows rapid purification of any protein of interest fused to GFP 	155.-
Macherey-Nagel Dueren, Germany www.mn-net.com Contact: Michael Bussmann Phone +49-(0)2421/969-270 or -275 tech-bio@mn-net.com	Protino Glutathione Agarose 4B	Purification of GST-tagged proteins / Batch binding, gravity-flow column chromatography, MPLC/FPLC applications	10 ml, 100 ml	<ul style="list-style-type: none"> ■ 4% beaded agarose, highest performance ■ Any protein size ■ Protino Glutathione Agarose 4B, the cost-effective alternative resin for GST-tag protein purification 	On request
	Protino GST/4B Columns	FPLC-based purification of GST-tagged proteins	1 ml / 5 ml columns	<ul style="list-style-type: none"> ■ See above ■ Protino GST/4B Columns, the cost-effective alternative for FPLC-based purification of GST-tag proteins with highest performance 	On request
	Protino Ni-TED Packed Columns / Resin	Purification of polyhistidine-tagged proteins / Batch binding, gravity-flow column chromatography, MPLC/FPLC applications	Resin: 5 g, 30 g, 120 g, 600 g / Prepacked gravity flow columns: Mini, Midi, Maxi	<ul style="list-style-type: none"> ■ Dry silica matrix ■ Most selective His-Tag binding ■ Low metal leaching ■ TED as chelating group ■ High specificity by TED as the chelating group for highest purity of His-tag proteins 	On request
	Protino Ni-IDA Packed Columns / Resin	See above	Resin: 5 g, 30 g, 120 g, 600 g / Mini, Midi, Maxi / 96-well gravity-flow plates	<ul style="list-style-type: none"> ■ Dry silica matrix, high purity, high yield ■ IDA as chelating group ■ High affinity by IDA as the chelating group for high yield and high purity of His-tag proteins 	On request
Merck Chemicals Calbiochem, Novabiochem, Novagen www.merck4biosciences.com Contact: Costumer service Phone: 0800 6931 000 Customer.service@merckbio.eu Technical service Phone: 0800100 3496 techservice@merckbio.eu	BugBuster HisBind Purification Kit	Affinity purification of His-Tag fusion proteins	Capacity of up to 8 mg/ml of resin / Average capacity of 5-10 mg/ml / Capacity of up to 30 mg/cartridge	--	410.-
	BugBuster Ni-NTA HisBind Purification Kit				345.-
	Ni-MAC Purification Kit				312.-
	Co-MAC Purification Kit				312.-
	Stag rEK Purification Kit	Affinity purification of Stag fusion proteins	Average capacity of 500 µg/ml of resin	--	354.-
Stag Thrombin Purification Kit				354.-	
StrepTactin SpinPrep Kit	Affinity purification of StrepTag II fusion proteins	Average capacity of 150 µg/column or 100 µg/well, respectively	--	279.-	
StrepTactin HT96 Purification Kit				486.-	
BugBuster GSTBind Purification Kit	Affinity purification of GSTTag fusion proteins	Average capacity of 5-8 mg protein/ml settled resin	--	481.-	
Millipore Bioscience Division Schwalbach/Ts, Germany www.millipore.com Contact: Phone +49-(0)6196-494-299 (GE) +41-(0)0433994049 (SZ) +43-(0)820874464 (AU) technischerservice@millipore.com	PureProteome Nickel Magnetic Bead System	Purification of HIS-tagged proteins	10 ml	<ul style="list-style-type: none"> ■ 5 -15 mg of protein per ml of settled beads ■ Magnetic Beads ■ Bead system to purify polyhistidine-tagged recombinant proteins 	350.-
	Montage Spin Columns with PROSEP-A / G media	Antibody purification	2 or 6 prepacked columns (20 / 60 purifications)	<ul style="list-style-type: none"> ■ Purify 10 - 20 mg in less than 60 minutes ■ Antibody purification from serum, ascites or cell culture supernatants. The kits include spin columns pre-packed with high capacity PROSEP-A or G media 	751.-

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Promega Mannheim, Germany www.promega.com/de Contact: Truc Bui Phone +49-621 8501 164 truc.bui@promega.com	HaloTag Protein Purification System	Purification of HaloTag fusion proteins expressed in <i>E. Coli</i>	100 ml of HaloLink Resin, 5 ml of HisLink resin and 1,6 ml of TEV protease for use with HisLink resin	<ul style="list-style-type: none"> ■ Superior yield and purity of soluble protein ■ Especially for difficult to express proteins ■ Efficient recovery of tag-free protein devoid of protease contamination ■ System includes a TEV protease to release the purified protein from the resin without residual tag 	510.-
	HaloTag Protein Purification System Sample Pack	See above	10 ml (HaloLink), 0,5 ml (HisLink), 200 µl (TEV)	■ See above	170.-
PromoCell Heidelberg, Germany www.promokine.info Contact: Technical Support Phone +49-6221 64934-0 info@promokine.info	PromoKine Mammalian Whole Cell Protein Extraction Kit	Isolation of total cellular proteins	500 Assays	<ul style="list-style-type: none"> ■ Takes ~20 minutes ■ Proteins prepared can be utilized in a variety of applications 	219.-
	PromoKine Membrane Protein Extraction Kit	Isolation of membrane proteins	50 Assays	<ul style="list-style-type: none"> ■ Highly pure membrane protein isolation ■ Takes less than 1 hour ■ Membrane proteins prepared using the kit can be utilized in a variety of applications 	299.-
	PromoKine Cell Fractionation Kits (Nuclear/Cytosol, Mitochondria/Cytosol, Cytosol/Particulate, Complete Cell Fractionation)	Separation of proteins from the cytosolic, mitochondrial, nuclear and particulate cell fractions	25 Assays/100 Assays (Nuclear/Cytosol & Mitochondria / Cytosol Fractionation Kits) 50 Assays (Cytosol / Particulate Fractionation Kit) 50 Assays (Complete Cell Fractionation Kits)	<ul style="list-style-type: none"> ■ Fast, simple & convenient ■ Highly enriched protein fractions ■ Prepared fractions are suitable for many downstream assays ■ Fractionation of cellular proteins into distinct subcellular groups 	159.-/ 299.- 279.- 399.-
Qiagen Hilden, Germany www.qiagen.com Contact: Jutta Drees Phone +49-2103-2916259 jutta.drees@qiagen.com	Glutathione Superflow	Purification of GST-tagged proteins / Pull-down assay	Bulk formats with a bed volume of 10 ml, 100 ml, or 500 ml, and Glutathione Superflow Cartridges for purification by FPLC (5 x 1 ml and 5 x 5 ml)	<ul style="list-style-type: none"> ■ GST-tag increases protein solubility ■ Binding capacity of 12 mg/ml resin ■ Resin for batch, gravity-flow or FPLC purification 	191.- (10 ml)
	Strep-Tactin Superflow Plus	Purification of Strep-tagged proteins	Bulk formats with a bed volume of 2 ml or 10 ml, and 1 ml, or 5 ml Strep-Tactin Superflow Cartridges for purification by FPLC	<ul style="list-style-type: none"> ■ Increased binding capacity of up to 9 mg/ml resin ■ Well suited for prokaryotic and eukaryotic expression systems ■ Resin for batch, gravity-flow, or FPLC purification 	523.- (10 ml)
	Ni-NTA Agarose and Ni-NTA Superflow	Purification of His-tagged proteins	Bulk formats with a bed volume of 25 ml, 100 ml, or 500 ml, and Ni-NTA Superflow Cartridges (1 ml, 5 ml, various pack sizes)	<ul style="list-style-type: none"> ■ High binding capacity of up to 50 mg/ml resin ■ Resin compatible with a wide range of additives ■ Ni-NTA Agarose for batch and gravity flow and Ni-NTA Superflow for FPLC purification 	276.- (Ni-NTA Agarose, 25 ml) 325.- (Ni-NTA Superflow, 25 ml)
	Ni-NTA Membrane Protein Kit	For initial screening of the most suitable detergent for solubilization and subsequent purification of His-tagged membrane proteins	For 5 detergent screenings and 5 affinity purifications	<ul style="list-style-type: none"> ■ Complete kit for standardized handling of membrane proteins ■ Starting material: <i>E. Coli</i>, insect cell culture, or cell-free extracts ■ Kit contains 7 detergents, buffers, Ni-NTA Superflow, Penta-His Antibody, disposable Columns 	570.-
	Ni-NTA Fast Start Kit	Kit for purification and detection of His-tagged proteins	Kits allows 6 protein preps	<ul style="list-style-type: none"> ■ Ideal for researchers new to protein science ■ Everything required for efficient purification in one kit ■ Kit contains 6 gravity flow columns, Penta-His Antibody, buffers and reagents 	292.-
Thermo Fisher Scientific Bonn, Germany www.thermo.com/perbio Contact: Carolin Kutzki Phone: +49-228 2427409 perbio.eurotech@thermofisher.com	HisPur Ni-NTA Spin Purification Kits	Purification of His-tagged proteins	Kits with 0,2 ml - 3 ml columns, additionally individually sold spin columns and resins	<ul style="list-style-type: none"> ■ High capacity up to 60 mg/ml, cost-effective, flexible ■ Efficient purification of His-tagged proteins with the well-known Ni-NTA chemistry, highest yields 	245.- to 260.- (£ 221.- to 234.-)
	HisPur Cobalt Purification Kit	Purification of His-tagged proteins	Kits with 0,2 ml - 3 ml columns, additionally individually sold spin columns and resins	<ul style="list-style-type: none"> ■ High capacity up to 60 mg/ml, cost-effective, flexible ■ Efficient purification of His-tagged proteins using Cobalt for highest purity 	239.- to 253.- (£ 185.- to 196.-)
	Pierce c-Myc-Tag IP/Co-IP Kit and Pierce HA-Tag IP/Co-IP Kit	Co-IP experiments with c-Myc or HA-tagged proteins	Complete kits for 25 experiments	<ul style="list-style-type: none"> ■ Highly specific antibody against tag ■ Positive control included ■ Robust and convenient ■ High capacity and high specificity are key for these kits 	392.- (£ 272.-)
	Melon Gel IgG Purification Kits	Purification of IgG from serum, ascites or cell culture supernatant	For 18 - 150 ml serum	<ul style="list-style-type: none"> ■ High purity, gentle protocol ■ Fast and simple ■ Gentle and rapid purification with out binding and elution of IgG 	252.- to 520.- (£ 177.- to 381.-)