

This chapter covers biochemicals and tools dedicated primarily for biochemistry of proteins, from the extraction step to modifiers, crosslinkers, and labeling agents. Many products can be used as well as for other biomolecules. The chapter ends with specialized applications, including ag-carrier conjugation for immunization, an innovative chemistry for synthesis, and metal chelated chemistry.

Proteomics Methods Charts

Process T.	Protein sample	Analysis		Proteomics		
		Methods	Obtained information	Expression Localisation Regulation	Structure Folding Post-trad	Function Binding enz.activity
Extraction Solubilization/ precipitation by solvents/detergents[a]	Cell - Tissue Bacteria Biol.fluids	BioAssays [14]	Tissue/Cell type Cell fraction	+++		+
Purification HPLC & SPE (ionic, RP/NP, gel filtration, affinity) [b]	Protein Extracts Analysis to characterize and identificate	SDS-PAGE/blotting[3] - W/O reduction - With reduction	Purity MW Protein II structure glycosides	+	+	+
Biochemistry Derivatization Cross linking Labeling [c]	Pure Protein	IEF 2-D electrophoresis [4]	pI +... 		+	+
	Proteous probes	Blotting [5]	identification of ag/epitopes	++	++	+
Ab Production [d]		Enzyme fragmentation [6] and MS	clivage sites prosthetic groups Mass fingerprinting		++	
	Antibodies	Peptide sequencing (Edman) Crystallography [8] Peptides mapping [9]	aa sequence terminus 3D structure aa seqc homologies		++ +++ ++	+
	Protein data bases + genes data bases	Immuno & Bioassays in vitro [10] MicroArrays [11] Phage Display [12] Biocaptors	clivage or binding sites Expression level Expression level Interactions	++ +++ ++		+
Molecular Biology	Protein expression systems [f] Silencing [g]	Protein reporter Bioassays [15] (in situ activity) (in situ detection)	Protein expression Protein interactions Protein localisation	+++		
	Cell Culture [e]					

[a] see pages B1-10 (extraction reagents)

[b] see pages B110-190 (dialysis, filtration, SEC, RP, Affinity, SPE)

[c] see pages B11-89 (crosslinking, biotin, fluorescent & enzymatic labeling)

[d] see pages B91-95 (Maleimide carrier, Maxibind™, TiterMax adjuvants)

[e] see pages E1-E30 chapter D/cell culture (Hydridokine, Accutase)

[f] see pages B213-219 (recombinant protein)

[g] see pages B219-222 (Transit TKO)

[3-4] see pages B194-208 (Electrophoresis reagents (from gel preparation tu protein staining)

[5] see chapter A/Blotting tools, and immunologicals

[6] see page B39

[7]

[8] see page B225-233 (JBScreen)

[9] see immunoblotting[5], phage display [12]

[10] see chapters A and E (cell probes and assay kits)

[11] see page B210-212 (Nexterion Slides, Ab Array, Human Tissue slides), and immunologicals (A)

[12] see page B223 (cDNA libraries)

[13]

[14] see chapter E (cell biology probes), A (I Abs and Ags)

[15] see page B230-232

Isolation/Modification/Labeling

Protein labeling

Detergents, general information

Detergents are water-soluble molecules classified according to their hydrophilic/hydrophobic character and ionic groups. This effectively drives the pattern of protein/detergents interactions. Notably their hydrophobic tail associates to form micelles, or aggregates, or interacts with other molecules (lipids, proteins).

Detergents apply at 3 essential steps in biochemistry of proteins: extraction, storage, and analysis :

- ◆ Proteins are usually extracted by lysis of the cells and tissues in presence of detergents (SDS, Triton® X100, X114, CHAPS, DOC, NP40, OctylThioGlucosides) that disorganize the membranes lipidic bilayer, and solubilized proteins. Non-solubilized material is harvested by centrifugation or other means.

- ◆ In solution, detergents help keeping molecules in solution, by dissociating aggregates, increasing solubility, and unfolding proteins.

- ◆ For electrophoresis, proteins are classically treated with SDS to denature the native tertiary and quaternary structures, allowing the separation of proteins according to their molecular weight.

Notes : SMP = Sample Preparation, Enz. = enzymatic studies, Anal. = Analytical techniques, Chrom&Electr = Chromatography and Electrophoresis analysis.

Detergents

Interchim offers a range of highly purified detergent for requirements of :

- ◆ Protein solubilization
- ◆ Immunological techniques
- ◆ Lipids and proteins biochemistry

Several detergents are also used for other applications.

Our purified detergents powders are for general use, and high quality grades for molecular biology applications, including 'oxidant free solutions', 'Biotech grade', "Proteomics grade" and "Molecular Biology grade" powders.

"Oxidant free solutions" and "proteomics grade" are recommended each time that the biomolecules activity (especially labile or sensible receptors, enzymes...) may be affected by the quality of detergents during extraction, purification, storage, and analysis (electrophoresis, bioassay...).

"Molecular Biology grade" is recommended essentially for genomic molecular biology applications, including extraction and electrophoresis analysis. One key specification is to be DNase, RNase free.

Cat.#	Detergent	Type	PM	Aggregation Number	Micelle PM	CMC (mM)	HLB (mM)	Cloud pt (°C)	Common Applications
UP09187	Brij-35	non-ionic	1225	40	49 k	0,05-(0.09)-0.1	16.9	>100	SMP, Chrom&Electr.
UP31473	Brij-56	non-ionic		a					
UP31474	Brij-58	non-ionic	1120	70	82 k	0,077	15.7	>100	
11966B	Digitonin	non-ionic	1229.3	5-6					
UP01838	Guanidine	-	-	-	-	-	-	-	-
UP78548	Hecameg	non-ionic	335.4			19.5			SMP (receptors)
24637	Nonidet P-40	non-ionic	602	149	90 k	0.5-(0.29)-0.3	13.1	80	SPM ; Chrom&Electr.
UP60207	n-nonyl-b-D-glucopyranoside	non-ionic	306.4			6.5			
UP26370	n-octyl-b-D-glucopyranoside	non-ionic	292.4	84	7.9 k	20-25		>100	SMP, Anal., Immunol..
UP60208	n-octyl-b-D-thioglucopyranoside	non-ionic	308.4			9		>100	SMP (mild), Enz.
UP42613	n-decyl-b-D-maltopyranoside	non-ionic	482.6			1.8			
UP34675	n-dodecyl-b-D-maltopyranoside	non-ionic	510.6	98		0.1-(0.17)-0.6			SMP, Anal., Enz., Chrom&Electr.
UP55205	n-undecyl-b-D-maltopyranoside	non-ionic	496.6			0.59			
UP52112	Triton X-100	non-ionic	Av.646	100-(140)-155	90 k	0.2-(0,23)-0.35	13.5	64	SMP, all purposes
UP15852	Triton X-114	non-ionic	Av.536			0.17	12.4	23	SMP, Enz.
UP15874	Tween 20	non-ionic	Av.1227			0.059	16.7	95	Immunol. Solub.Anal
UP15878	Tween 80	non-ionic	Av.1310	60	76 k	0.012	15		Immunol.Stabil.IgM
UP33351	CHAPS	zwitterionic	614.9	4-14	6.1k	6-(8)-10	-	>100	SMP, Anal., Enz., Chrom&Electr.
UP35639	CHAPSO	zwitterionic	630.9	10	6149	8		>100	SMP, Anal., Enz., Chrom&Electr.
UP11708	DOC	anionic	414.6	5	2 k	1.5	-	-	-
UP89682	SDS	anionic	288.5	62	18-24k	7-10	40	>100	Electroph., SMP
UP03190	Urea		60.06						Electroph.

Oxidant free detergents

This quality is proposed for several polyoxyethylenes and carbohydrates derivatives detergents used for protein extraction. Peroxide content is below 5-20µM

Brij-35

23 Lauryl ether ; C₁₂E₂₃

Main Applications : sample preparation, chromatography

Description	Cat.#	Qty
Brij-35, Oxidant Free, 10% solution	UP091870	5 x 10 ml
	UP091871	10 x 10 ml

Brij-56

10 Cethyl ether

Description	Cat.#	Qty
Brij-56, Oxidant Free, 10% solution	UP314736	5 x 10 ml
	UP314737	10 x 10 ml

Brij-58

20 Cethyl ether

Description	Cat.#	Qty
Brij-58, Oxidant Free, 10% solution	UP314740	5 x 10 ml
	UP314741	10 x 10 ml

Triton X-100

Octyl phenoxy poly ethoxy phenol

Main Applications : Protein extraction

Description	Cat.#	Qty
Triton X-100, Oxidant Free, 10% solution	UP521121	5 x 10 ml
	UP521122	10 x 10 ml

Triton X-114

Main Applications:Protein extraction

Description	Cat.#	Qty
Triton X-114, Oxidant Free, 10% solution	UP158528	5 x 10 ml
	UP158529	10 x 10 ml

Triton X-305

Description	Cat.#	Qty
Triton X-305, Oxidant Free, 10% solution	UP708534	5 x 10 ml
	UP708535	10 x 10 ml

Triton X-405

Description	Cat.#	Qty
Triton X-405, Oxidant Free, 10% solution	UP158536	5 x 10 ml
	UP158537	10 x 10 ml

Tween 20

Polyoxyethylene sorbitan ; C12-sorbitan-E20

Main Applications : Immunoassays, surfactant

Description	Cat.#	Qty
Tween 20, Oxidant Free, 10% solution	UP158740	5 x 10 ml
	UP158741	10 x 10 ml

Tween 80

Polyoxyethylene sorbitan ; C18:1-sorbitan-E20

Main Applications : IgM stabilization, vaccin ingredient, emulsifier

Description	Cat.#	Qty
Tween 80, Oxidant Free, 10% solution	UP158780	5 x 10 ml
	UP158781	10 x 10 ml

Technical tip

A lot of polyoxyethylenic detergents are available in a variety of structures and under trade names, like famous Brij®, Tween® and Triton®. Most are industrial products containing a mixture of related structures. The composition often varies with batches. When the manufacturing is of bad quality, several contaminants impair biological activity of biomolecules like enzymes, labile tertiary structures and receptors... Furthermore, polyoxyethylenic detergents tend to alter, mostly by oxidation, and this aging process is increased by light and temperature. Oxidation generates peroxides, carboxyls and free radicals that may reach up to 0.2%.

Even at far lower concentration, these oxidizing agents may be very critical in your application : such contaminants are often responsible for inactivation, denaturation, fragmentation of the desired biomolecule (Jaeger 1994), especially during the extraction from cell lysates. Sulfhydryls are readily oxidized by peroxides that induce receptors aggregation (Chang 1974) or transition of conformation state (O'Brien 1975). Contaminants may also interfere in biochemical analysis (i.e. for estrogen (Lever 1977), or even protein with Coomassie (Stuzenberg 1992).

Do you want reliable results ? Choose Uptima oxidant free detergents. They are purified by chromatography, and contain less than 5-20 µM of peroxides equivalents. They are supplied as convenient 10% solution vials.

Carbohydrate derived detergents

Carbohydrate based detergents are mild solubilizing, dissociation agents that overcome often polyoxyethylenic detergents for extraction, purification, and crystallization of membrane proteins and enzymes. The aging of these detergents also generates oxidative compounds, so we propose compounds which purity is highly controlled to that point.

n-Octyl-β-D-glucopyranoside- UltraPure

Purity (HPLC) > 99% - Alpha (HPLC) : < 2%
Decanol (HPLC) : < 0.005% - pH (solution 1%) : 5-8
Solubility in water (20°C) : > 20% - Conductivity (solution 10%) : < 40 μS

Description	Cat.#	Qty
n-Octyl-β-D-glucopyranoside, UltraPure	UP263700	1 g
	UP263701	5 g

n-Nonyl-β-D-glucopyranoside- UltraPure

Purity (HPLC) > 99% - Alpha (HPLC) : < 2%
Decanol (HPLC) : < 0.005% - pH (solution 1%) : 5-8
Solubility in water (20°C) : > 20% - Conductivity (solution 10%) : < 40 μS

Description	Cat.#	Qty
n-Nonyl-β-D-glucopyranoside, UltraPure	UP602071	1 g
	UP602072	5 g

n-Octyl-β-D-thioglucopyranoside- UltraPure

Purity (HPLC) > 99% - pH (solution 5%) : 5-8
Solubility in water (0-5°C) : > 0.8% - Conductivity (solution 0.5%) : < 40 μS

Description	Cat.#	Qty
n-Octyl-β-D-thioglucopyranoside, UltraPure	UP602080	1 g
	UP602081	5 g

n-Decyl-β-D-maltopyranoside- UltraPure

Purity (HPLC) > 99% - Alpha (HPLC) : < 2%
Decanol (HPLC) : < 0.005% - pH (solution 1%) : 5-8
Solubility in water (20°C) : > 20% - Conductivity (solution 10%) : < 40 μS

Description	Cat.#	Qty
n-Decyl-β-D-maltopyranoside, UltraPure	UP426131	1 g
	UP426132	5 g

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n-Undecyl-β-D-maltopyranoside- UltraPure

Purity (HPLC) > 99% - Alpha (HPLC) : < 2%
Decanol (HPLC) : < 0.005% - pH (solution 1%) : 5-8
Solubility in water (20°C) : > 20% - Conductivity (solution 10%) : < 40 µS

Description	Cat.#	Qty
n-Undecyl-β-D-maltopyranoside, UltraPure	UP552051	1 g
	UP552052	5 g

n-Dodecyl-β-D-maltopyranoside- UltraPure

Purity (HPLC) > 99% - Alpha (HPLC) : < 2%
Decanol (HPLC) : < 0.005% - pH (solution 1%) : 5-8
Solubility in water (20°C) : > 20% - Conductivity (solution 10%) : < 40 µS

Description	Cat.#	Qty
n-Dodecyl-β-D-maltopyranoside, UltraPure	UP346751	1 g
	UP346752	5 g

Decyl Glucopyranoside

C₁₆H₃₂O₆ - MW : 320.43 - Purity >98%

Description	Cat.#	Qty
Decyl Glucopyranoside	N14270	100 mg
	N14271	1 g

Dodecylglucopyranoside

Purity > 99% - C₁₈H₃₆O₆ - MW : 348.5

Description	Cat.#	Qty
Dodecylglucopyranoside	N14250	100 mg
	N14251	1 g

Hecameg

(6-O-(N-heptylcarbamoyl)-methyl-β-D-glucopyranoside)
MW: 335.4 - CAS: 115457-83-5
Purity (HPLC) : > 99% - Non ionic
Useful for membrane proteins purification

Description	Cat.#	Qty
Hecameg	UP785480	5 g

See also Tissue Extraction reagent #Q69960 page E169, for apoptosis tests

Isolation/Modification/Labeling

Protein labeling

Detergent Powders

Big CHAP

N,N-Bis[3-D-Gluconamido-Propyl]Cholamide
MW : 740

Big CHAP	N14100	5 g
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BRIJ-35

Biotech grade

BRIJ-35	09187A	1 Kg
	09187B	5 Kg

BRIJ- 35

Proteomics grade

BRIJ-35	09187K	1 Kg
	09187L	5 Kg

C12 E8

(Octaethyleneglycol Mono-N-Dodecyl Ether) ; C28H58O9; MW: 538.77
Purity >98%

C12 E8	N14210	1 g
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C12 E9

Nonaethyleneglycol Mono-N-Dodecyl Ether
MW : 582.82
Purity >98%

C12 E9	N14510	1 g
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CetylDiMethylEthylAmmonium Bromide (CDMEA)

$C_{20}H_{44}NBr$; MW : 378.49
Purity >99%

CetylDiMethylEthylAmmonium Bromide (CDMEA)	25552A	100 g
	25552B	500 g

CetylTriMethylAmmonium Bromide (CTAB)

MW : 364.46
Purity >99%

CetylTriMethylAmmonium Bromide (CTAB)	12910A	500 g
	12910B	1 Kg

CHAPS, UltraPure

3-[(3-Cholamidopropyl)dimethylammonio]-1-propanesulfonate

MW : 614.89

CAS : 75621-03-3

Zwitterionic detergent (electronically neutral) ; protects the native state of proteins. Easily removed by dialysis.

Purity (HPLC) > 99%

Conductivity (0.5 M) < 50 μ S

CHAPS, UltraPure	UP333514	5 g
	UP33351A	25 g
	UP333515	100 g

CHAPS, Proteomics grade

DNas/RNase free

CHAPS, Proteomics grade	UP333514	5 g
	UP33351A	25 g
	UP333515	100 g

See also packaging in 10ml amps with oxidant free grade #UP09187 page B3.

CHAPSO, UltraPure

3-[(3-Cholamidopropyl)dimethylammonio]-2-hydroxy-1-propanesulfonate

MW : 630.89

Zwitterionic detergent (electronically neutral) ; protects the native state of proteins. Easily removed by dialysis

Purity (HPLC) > 99%

pH (solution 1%) 5-8

Conductivity (0.5 M) <100 µS

CHAPSO, UltraPure	UP356392	1 g
	UP356393	5 g

CHAPSO, Proteomics grade

Abs 260nm <0.05, conductance(0.5M, water) <1000µmhos

Protease free

CHAPSO, Proteomics grade	35639B	1 g
	35639C	10 g
	35639D	50 g

Deoxy Big CHAP

MW : 834.02 - High Purity grade

Deoxy Big CHAP	N14240	500 mg
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Deoxycholic Acid (DOC), Sodium Salt

MW : 441.57

UltraPure (>99%) ; devoid of C16, UV absorbing substances. Heavy metals and chloride

Heavy metals : < 0.005%

Sodium Cholate < 2%

Devoided of contaminants that may affect the renaturation of proteins, the detection sensitivity by UV, and separations and enzymatic activities

Deoxycholic Acid (DOC), Sodium Salt	UP11708D	10 g
	UP11708E	50 g
	11708B	100 g
	11708C	500 g

Dodecyltrimethylammonium Chloride

approx. MW : 263

50% solution in alcohol. High Purity Grade (>99%)

Dodecyltrimethylammonium Chloride	N12850	100 ml
	N12851	500 ml

Lithium Dodecyl Sulfate

MW : 272.33

High purity grade (>99%)

Lithium Dodecyl Sulfate	259845	25 g
	259846	100 g
	259847	500 g

MEGA-10

Decanoyl-N-Methylglucamide

MW : 349.47

Ultra Pure Grade

MEGA-10	N14220	5 g
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MEGA-8

Octanoyl-N-Methylglucamide

MW : 321.42

UltraPure Grade

MEGA-8	N14260	5 g
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Isolation/Modification/Labeling

Protein labeling

Technical tip

SDS is a critical reagent in many molecular biology applications. It is widely known that default in the purity and C12 content dramatically affects the performance of this detergent. For example, contaminating levels of C16-alkyl sulfate particularly affect protein renaturation, and contaminating UV absorbing materials affect detection sensitivity. Additionally, heavy metals/chloride contaminants affect separation and enzymatic activities.

Our Biotechnology Grade SDS is especially high in both purity and C12 content. This nuclease and protease free material is ideally suited for protein and nucleic acid purification, hybridization cocktails, protein electrophoresis, wash buffers and protein studies.

MEGA-9

Nonanoyl-N-Methylglucamide
MW : 335.4
Ultra Pure Grade

MEGA-8	N14230	100 mg
	N14231	5 g

Nonidet P-40 Substrate

Octylphenoxypolyethoxyethanol [Nonidet P-40 is a registered trademark of Shell Chemicals]
Reagent Grade - HLB Number : 13.1

Nonidet P-40 Substrate	246373	50 ml
	246374	100 ml
	246375	500 ml

Nonidet P-40 Substitute, Proteomics Grade

MW : 250.38
Protease free

Nonidet P-40 Substitute, Proteomics Grade	246376	50 ml
	246377	100 ml
	246378	500 ml

SDS powder

MW : 288.38
Anionic detergent. Suitable for biotechnology applications, molecular biology and genomics.
Excellent batch to batch reproducibility
Purity (HPLC) > 99%
Content in C12 : > 99%
Nuclease, RNase and protease free
OD260 and OD280 (3% solution in water) < 0.1
Chlorides < 0.1%
Copper, Lead < 5ppm

SDS powder	08938A	100 g
	08938B	250 g
	UP08938C	500 g

SDS, powder, Proteomics grade

Same specifications as SDS #08938 but also Protease free

SDS, powder, Proteomics grade	GS3750	100 g
	GS3751	250 g
	GS3752	500 g
	GS3753	1 Kg

SDS, 20% (w/v) solution	896820	200 ml
	UP896826	500 ml

SDS, 20% (w/v) solution, Proteomics grade	89682A	200 ml
Protease, DNase, RNase free	89682B	500 ml

SDS, 10% (w/v) solution, Proteomics grade	GS3770	100ml
Protease, DNase, RNase free		

Sodium Lauroyl Sarcosine

MW : 293.39
Reagent Grade ; Purity: >95.0 % ; Sodium Laurate : <=4.0%

Sodium Lauroyl Sarcosine	258166	500 g
	258167	1 Kg

Sulfobetaine 8

MW : 279.45
Biotechnology Grade

Sulfobetaine 8	N14140	5 g
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Sulfobetaine 10

MW : 307.48
Biotechnology Grade

Sulfobetaine 10	N14150	10 g
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Sulfobetaine 12

MW : 335.55
Biotechnology Grade (>99%)

Sulfobetaine 12	N14160	10 g
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Tetradecyl Trimethyl Ammonium Bromide

MW : 336.40
High Purity Grade (>99%)

Tetradecyl Trimethyl Ammonium Bromide	25917L	100 g
	25917K	500 g

TRITON X-100

t-octylphenoxyethoxyethanol
MW : 647
Color (APHA) <=100
Peroxides(P/F) : none
pH (5%, Water) @25C : 6.0-8.0

TRITON X-100, Reagent Grade	15851B	1 L
	15851C	4 L
TRITON X-100, Proteomics grade	521128	1 L
	521129	4 L

TRITON X-114

MW : 536.0

TRITON X-114, Reagent Grade	15852F	1 L
	15852G	4 L
TRITON X-114, Proteomics Grade	15852B	1 L
	15852C	4 L

See also packaging in 10ml amps with oxidant free grade #UP521122

TWEEN 20

Polyoxyethylene-20-Sorbitan Monolaurate
Reagent Grade
Arsenic(%) <=0.0003
Heavy Metals(%) <=0.001
Hydroxyl Number : 96-108
Moisture (KF)(%) <=3.0
Residue on Ignition(%) <=0.25

TWEEN 20	15874A	1 L
	15874B	4 L
TWEEN 20 Proteomics Grade	15874K	1 L
Same specifications as 15874A but DNase, RNase & Protease free	15874L	4 L

See also packaging in 10ml amps with oxidant free grade #UP158528

TWEEN 80

Polyoxyethylene-20-Sorbitan Monooleate
Reagent Grade
HLB Number 15.0
Heavy Metals(%) <=0.001
Hydroxyl Number 65-80
Moisture (KF)(%) <=3.0
Residue on Ignition(%) <=0.25

TWEEN 80	15878F	1 L
	05878G	4 L
TWEEN 80, Proteomics grade	15878A	100 ml
	15878B	1 L
	15878C	4 L

See also packaging in 10ml amps with oxidant free grade #UP158740

Isolation/Modification/Labeling

Protein labeling

Urea - UltraPure

MW : 60.06
Suits Molecular Biology applications
Purity (HPLC) > 99,5%
DNase, RNase, Proteases : non detected
OD 280 (8M in water) : < 0.15
Heavy metals content : < 0.001%
Solubility in water (20°C) : > 20%
Conductivity (solution 10%) : < 40 mS

See also packaging in 10ml amps with oxidant free grade #UP158780

Urea - UltraPure	UP031903	500 g
	UP031904	1 Kg

Proteases inhibitors

Interchim provides high quality protease inhibitors to preserve protein during storage, solubilization extraction and purification procedures, or during protein analysis, for the requirements of biochemistry, molecular Biology, and proteomics. Product descriptions can be found in section "CellCulture".

Description	Cat.#	Qty
AEBSF	GS4072	50 mg
Antipain dihydrochloride	25731C	5 mg
Aprotinin	18558D	10 mg
Aprotinin	18558E	50 mg
Benzamidine hydrochloride	003059	25 g
Benzamidine hydrochloride	00305B	50 g
Benzamidine hydrochloride	00305A	100 g
Bestatin	300995	10 mg
Chymostatin	29706D	5 mg
E-64	GS4080	5 mg
EDTA-Na2	T32141	500 g
EDTA-Na2	T32142	1 Kg
EDTA-Na2	T32143	2,5 Kg
Leupeptin	827728	5 mg
Leupeptin	827729	25 mg
Pepstatin	827754	5 mg
Pepstatin	827755	25 mg
1,10-phenathroline	GS3880	10 g
1,10-phenathroline	GS3881	50 g
PMSF	GS3920	5 g
PMSF	GS3921	25 g
Phosphoramidon	348118	5 mg
Trypsin inhibitor, soybean	N15153	1 g
Trypsin inhibitor, soybean	N15152	10 g
protease inhibitor cocktail	374723	1 ml
protease inhibitor cocktail with EDTA	374724	1 ml
protease inhibitor cocktail mamalian	AN0990	1 ml

Technical tip

Proteolysis challenges in biochemistry
Proteases are ubiquitous enzymes in every cell of all organisms. They are released by cells during disruption of cells, and quickly degrade any protein. When one wants to recover or detect a given protein, protease inhibition is thus required to save the yield and the quality of the protein. Protease inhibitors are also useful to protect bioactive proteins during further analysis (western blotting, immunoprecipitation, bioassays, reporter analysis...), purifications steps (chromatography, long term dialysis), and storage.

Uptima recommends that protease inhibitors with broad specific activity are added to all stock buffers and solutions, and not only in initial purification step, because most inhibitor have reversible activity. A classic complete association is 3mg antipain, 0.5mg Bestatin, 1mg chymostatin, 3mg E-64, 0.5mg pepstatin, 3mg phosphoramidon, 20mg AEBSF, 0.5mg aprotinine and 10mg EDTA. EDTA may be avoided if metalloproteases are not a concern, notably in applications where diallent metals are needed (polyHist tagged recombinante affinity purification, enzymes with cofactors...).

See also protease inhibitor cocktail #374723 page E.19