

Antibody & Protein Purification Resins

BioVision offers a wide range of Agarose, Sepharose & Magnetic beads coupled to Protein A, Protein G, Protein L, Protein A/G, Protein A/G/L or Jacalin to purify monoclonal and polyclonal antibodies from culture media, serum, ascites fluid or hybridoma supernatants and to isolate antibody/antigen complexes in immunoprecipitation experiments. In addition, BioVision also offers Glutathione and Heparin-Sepharose that are routinely used for purification of GST-tagged fusion proteins and heparin-binding proteins respectively.

Antibody Purification Resins

Proteins A, G and L have been widely used for IgG purification. BioVision's Protein A, G and L resins consist of purified recombinant protein A, G & L respectively that have been covalently coupled to 6% cross-linked Agarose/Sepharose beads. The recombinant protein A and G contain only IgG binding domains and are purified from E. coli via multiple chromatographic steps (not affinity purified with human IgG). The albumin binding domain, cell wall binding domain and other non-specific regions have been removed to ensure the maximum specific IgG binding. Unlike Protein A and Protein G, which bind primarily through Fc regions (i.e., heavy chain) of immunoglobulin, Protein L binds Igs through interaction with the light chains. The recombinant Protein L contains only Kappa light chain binding region and thus has the ability to bind a wider range of Ig classes (IgG, IgM, IgA, IgE and IgD) and subclasses. Single chain variable fragments (ScFv) and Fab fragments also bind to Protein L. Purity of these recombinant proteins is > 98% by SDS-PAGE and HPLC. Endotoxin level is < 0.1 EU/mg of Protein. The 6-His-tag on N-terminus can be used for affinity purification or detection using anti-His-tag antibodies. BioVision has performed extensive research to prepare special Hi-Bind™ protein A & Hi-Bind™ protein G-Agarose beads that give a higher binding capacity for IgG, higher flow rate & minimal leaching of the ligand than the other regular Protein A & Protein G-Agarose on the market. The Protein A, G and L resins display high chemical and physical stability as well as show high flow rate, hydrophilicity & high gel strength. These resins are available in several convenient pack sizes and can be regenerated and reused multiple times when stored properly.

Protein Purification Resins

Expression & purification of recombinant proteins is important to study protein regulation, structure & function studies. Majority of the recombinant proteins are expressed as fusion proteins with short affinity tags or small proteins, such as GST. GST binds specifically to reduced glutathione. BioVision's Glutathione-Sepharose® is prepared by covalently coupling glutathione to epoxy-activated 4% cross-linked sepharose beads to form a stable thioether linkage. Heparin-Sepharose® is widely used for purifying serum proteins including coagulation factors, lipases, lipoproteins, hormone receptors and growth factors. BioVision's Heparin-Sepharose® is prepared by covalently coupling heparin to epoxy-activated 6% cross-linked sepharose beads. The coupling technique for Glutathione and Heparin-Sepharose® is optimized to exhibit high binding capacity (≥ 5 mg GST/ml Glutathione-Sepharose resin & ≥ 0.4 mg heparin-binding protein/ml of Heparin-Sepharose® resin), high flow rate & minimal leaching of the ligand.

Protein A & Resins

Product Name	Cat. No.	VWR Cat. No.	Size
Hi-Bind™ Protein A-Agarose	6520	10008-902	1 ml
Hi-Bind™ Protein A-Agarose	6520	10008-908	5 ml
Hi-Bind™ Protein A-Agarose	6520	10008-906	25 ml
Hi-Bind™ Protein A-Agarose	6520	10008-904	100 ml
Hi-Bind™ Protein A-Agarose	6520	75837-812	500 ml
Protein A-Agarose	6526	10191-454	1 ml
Protein A-Agarose	6526	10190-934	5 ml

Product Name	Cat. No.	VWR Cat. No.	Size
Protein A-Agarose	6526	10190-936	25 ml
Protein A-Agarose	6526	10190-938	100 ml
Protein A Antibody	5500	76005-012	30 µg
Protein A Antibody	5500	10007-818	100 µg
Protein A IgG Purification Buffer Kit	K6529	10190-952	3 Buffers
Protein A (Lyophilized)	6500B	10190-856	10 mg
Protein A (Lyophilized)	6500B	10190-862	25 mg
Protein A (Lyophilized)	6500B	10190-858	100 mg
Protein A (Lyophilized)	6500B	10190-860	1 g
Protein A (Liquid form)	6500	10190-848	10 mg
Protein A (Liquid form)	6500	10190-854	25 mg
Protein A (Liquid form)	6500	10190-850	100 mg
Protein A (Liquid form)	6500	10190-852	1 g
Protein A Magnetic Beads	6507	10008-860	1 ml
Protein A Sepharose	6501	10008-748	1 ml
Protein A Sepharose	6501	10008-842	5 ml
Protein A Sepharose	6501	10008-840	25 ml
Protein A Sepharose	6501	10008-750	100 ml
Protein A Sepharose (Endotoxin-free)	M1300	76005-266	1 ml
Protein A Sepharose (Endotoxin-free)	M1300	76005-268	5 ml
Protein A Sepharose (Endotoxin-free)	M1300	76005-270	25 ml
Protein A Sepharose Column	6508	10008-862	1 ml
Protein A Sepharose Column	6508	10008-864	5 ml

Protein G & Resins

Product Name	Cat. No.	VWR Cat. No.	Size
Protein G-Biotin	6512	10008-884	100 µg
Protein G-Biotin	6512	10008-886	1 mg
Protein G Antibody	5510	76005-026	30 µg
Protein G Antibody	5510	10008-070	100 µg
Protein G Coated 96-well Plates	6522	10835-318	1 Plate
Protein G Coated 96-well Plates	6522	10008-912	5 Plates
Protein G Magnetic Beads	6517	10008-896	1 ml
Protein G Sepharose	6511	10008-876	1 ml
Protein G Sepharose	6511	10008-882	5 ml
Protein G Sepharose	6511	10008-880	25 ml
Protein G Sepharose	6511	10008-878	100 ml
Protein G Sepharose Column	6518	10008-898	1 ml
Protein G Sepharose Column	6518	10008-900	5 ml
Protein G	6510	10008-866	1 mg
Protein G	6510	10008-874	5 mg
Protein G	6510	10008-868	10 mg
Protein G	6510	10008-870	100 mg

Product Name	Cat. No.	VWR Cat. No.	Size
Protein G	6510	10008-872	1 gram
Hi-Bind™ Protein G-Agarose	6513	10008-888	1 ml
Hi-Bind™ Protein G-Agarose	6513	10008-894	5 ml
Hi-Bind™ Protein G-Agarose	6513	10008-892	25 ml
Hi-Bind™ Protein G-Agarose	6513	10008-890	100 ml
Protein G Sepharose (Endotoxin-free)	M1301	76004-500	1 ml
Protein G Sepharose (Endotoxin-free)	M1301	76004-502	5 ml
Protein G Sepharose (Endotoxin-free)	M1301	76004-504	25 ml

Protein L & Resins

Product Name	Cat. No.	VWR Cat. No.	Size
Protein L	6530	10008-924	1 mg
Protein L	6530	10008-932	5 mg
Protein L	6530	10008-926	10 mg
Protein L	6530	10008-928	100 mg
Protein L	6530	10008-930	1 gram
Protein L Antibody	5530	76005-028	30 µg
Protein L Antibody	5530	10187-216	100 µg
Protein L Magnetic Beads	6537	10008-942	1 ml
Protein L Sepharose	6531	10008-934	1 ml
Protein L Sepharose	6531	10008-940	5 ml
Protein L Sepharose	6531	10008-938	25 ml
Protein L Sepharose	6531	10008-936	100 ml
Protein L Sepharose Column	6538	10008-792	1 ml
Protein L Sepharose Column	6538	10008-794	5 ml

Protein A/G

Product Name	Cat. No.	VWR Cat. No.	Size
Protein A/G	6502	10190-864	1 mg
Protein A/G	6502	10191-990	5 mg
Protein A/G	6502	10191-988	25 mg
Protein A/G	6502	10191-984	100 mg
Protein A/G	6502	10191-986	1 gram
Protein A/G-Biotin	6506	10190-870	100 µg
Protein A/G-Biotin	6506	10191-444	1 mg
Protein A/G-FITC	6504	10190-866	100 µg
Protein A/G-FITC	6504	10190-868	1 mg
Protein A/G Magnetic Beads	6527	10008-918	1 ml
Protein A/G Sepharose	6503	10008-844	1 ml
Protein A/G Sepharose	6503	10008-850	5 ml
Protein A/G Sepharose	6503	10008-848	25 ml
Protein A/G Sepharose	6503	10008-846	100 ml
Protein A/G Sepharose Column	6528	10008-920	1 ml
Protein A/G Sepharose Column	6528	10008-922	5 ml

Protein A/G/L & Resins

Product Name	Cat. No.	VWR Cat. No.	Size
Protein A/G/L	6540	10008-796	1 mg
Protein A/G/L	6540	10008-948	5 mg
Protein A/G/L	6540	10008-946	25 mg
Protein A/G/L	6540	10008-798	100 mg
Protein A/G/L	6540	10008-944	1 gram
Protein A/G/L Magnetic Beads	6547	10008-958	1 ml
Protein A/G/L Sepharose Column	6548	10008-960	1 ml
Protein A/G/L Sepharose Column	6548	10008-962	5 ml
Protein A/G/L Sepharose	6541	10008-950	1 ml
Protein A/G/L Sepharose	6541	10008-956	5 ml
Protein A/G/L Sepharose	6541	10008-954	25 ml
Protein A/G/L Sepharose	6541	10008-952	100 ml

T-Gel Agarose beads

Product Name	Cat. No.	VWR Cat. No.	Size
Hi-Bind™ T-Gel Agarose beads	M1313	76181-792	1 ml
Hi-Bind™ T-Gel Agarose beads	M1313	76181-794	10 ml
Hi-Bind™ T-Gel Agarose beads	M1313	76182-118	100 ml

Protein Purification Resins

Product Name	Cat. No.	VWR Cat. No.	Size
Hi-Bind™ Albumin-IgG Depletion Beads	7933	10835-396	1 ml
Hi-Bind™ Albumin-IgG Depletion Beads	7933	10835-398	5 ml
Hi-Bind™ Albumin-IgG Depletion Beads	7933	10835-400	25 ml
Calmodulin-Sepharose Beads	7934	10835-402	1 ml
Calmodulin-Sepharose Beads	7934	10835-404	5 ml
Calmodulin-Sepharose Beads	7934	10835-406	10 ml
Hi-Bind™ Cibacron Blue-Agarose Beads	7923	10835-546	10 ml
Hi-Bind™ Cibacron Blue-Agarose Beads	7923	10835-548	50 ml
Glutathione Sepharose	6555	10008-974	1 ml
Glutathione Sepharose	6555	10008-976	10 ml
Glutathione Sepharose	6555	10008-978	50 ml
Heparin Sepharose	6553	10008-964	1 ml
Heparin Sepharose	6553	10008-966	10 ml
Heparin Sepharose	6553	10008-968	50 ml
Heparin Sepharose Column	6554	10008-970	1 ml
Heparin Sepharose Column	6554	10008-972	5 ml
Immobilized Catalase Beads	7931	10835-388	1 ml
Immobilized Catalase Beads	7931	10835-390	10 ml

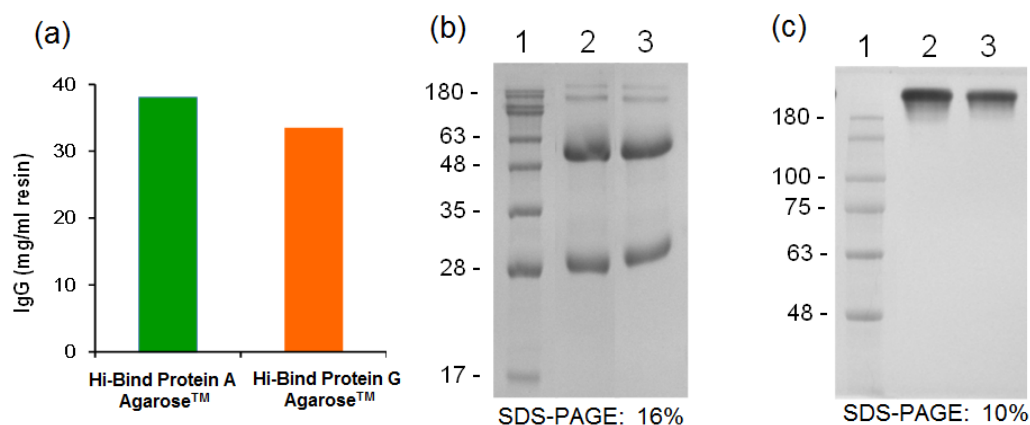


Figure 1: Hi-Bind™ Protein A & Hi-Bind™ Protein G-Agarose is an efficient resin for simple, rapid, specific and high-yield purification of IgG. **(a)** Purification of IgG from human serum using Hi-Bind™ Protein A & Hi-Bind™ Protein G-Agarose. **(b) & (c)** SDS-PAGE of purified IgG under reduced and non-reduced conditions respectively. Lane 1: Marker; Lane 2 & Lane 3: IgG fraction (5 µg) purified using BioVision Hi-Bind™ Protein A Agarose (Cat # 10008-902) & Hi-Bind™ Protein G Agarose (Cat # 10008-888) respectively.

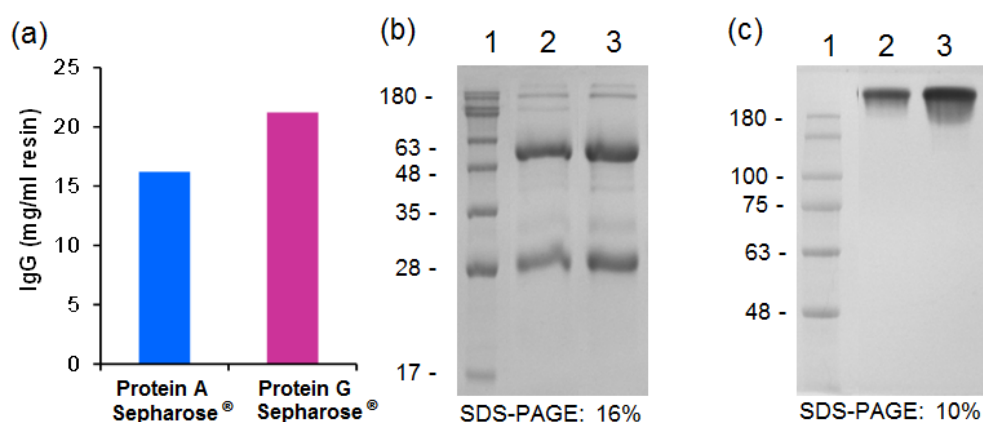


Figure 2: **(a)** Purification of IgG from human serum using BioVision's Protein A and Protein G- Sepharose®. **(b) & (c)** SDS-PAGE of purified IgG under reduced and non-reduced conditions respectively. Lane 1: Marker; Lane 2 & Lane 3: IgG fraction (5 µg) purified using BioVision Protein A Sepharose® (Cat # 10008-748) & Protein G Sepharose® (Cat # 10008-876) respectively.

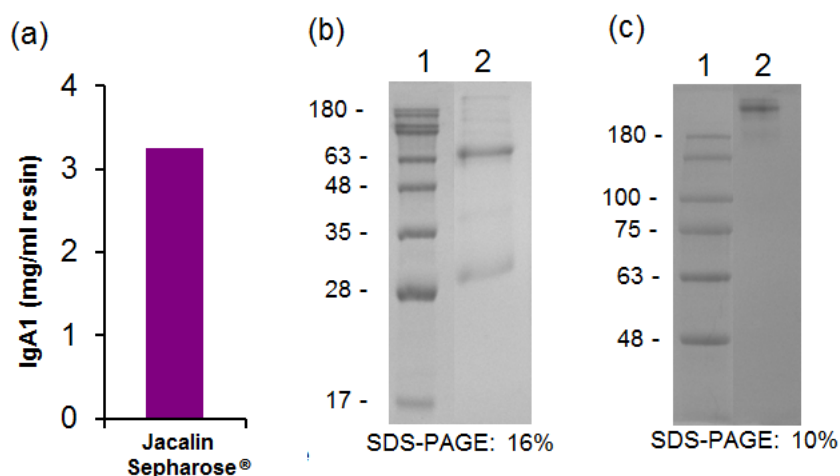


Figure 3: Jacalin Sepharose® for specific, high-yield purification of human IgA1. **(a)** Purification of IgA1 from human serum. Elution was performed with 0.1 M melibiose. **(b) & (c)** SDS-PAGE of purified IgA1 under reduced and non-reduced conditions respectively. Lane 1: Marker; Lane 2: IgA fraction (5 µg) purified using BioVision Jacalin Sepharose® (Cat # 10008-986).

Jacalin Sepharose®: Jacalin, an α -D-galactose binding lectin extracted from Jackfruit seeds, binds with high specificity to human IgA1. BioVision's high-quality Jacalin Sepharose exhibits specific, high-yield purification of human IgA from serum or colostrum and thus can also be used for removing contaminating IgA from IgG.

Jacalin Sepharose®

Product Name	Cat. No.	VWR Cat. No.	Size
Jacalin-Sepharose	6561	10008-986	1 ml
Jacalin-Sepharose	6561	10008-990	5 ml
Jacalin-Sepharose	6561	10008-988	25 ml

Table: Properties of BioVision's Protein A, G & Jacalin Resins

Features	Protein A-Agarose [10191-454]	Hi-Bind™ Protein A-Agarose [10008-902]	Protein A-Sepharose® [10008-748]	Protein A-Magnetic beads [10008-860]	Hi-Bind™ Protein G Agarose [10008-888]	Protein G Sepharose® [10008-876]	Protein G-Magnetic beads [10008-896]	Jacalin Sepharose® [10008-986]
Ligand	rProtein A	rProtein A	rProtein A	rProtein A	rProtein G	rProtein G	rProtein G	Jacalin
Number of IgG binding sites per ligand	5	5	5	5	3	3	3	-
Source	E. coli	E. coli	E. coli	E. coli	E. coli	E. coli	E. coli	Jackfruit seed
MW	39.21 KDa	39.21 KDa	39.21 KDa	39.21 KDa	26.1 KDa	26.1 KDa	26.1 KDa	23.4 KDa
pI	5.4	5.4	5.4	5.4	4.9	4.9	4.9	6.6
Coupling method	CNBr	CNBr	CNBr	CNBr	CNBr	CNBr	CNBr	CNBr
Matrix	Agarose 6BCL	Agarose 6BCL	Sepharose CL-6B	Paramagnetic, Agarose 6BCL	Agarose 6BCL	Sepharose CL-6B	Paramagnetic, Agarose 6BCL	Sepharose CL-6B
Flow rate tested* (cm/min)	4	4	0.85	-	4	0.85	-	0.85
Binding Capacity								
Human IgG (mg/mL)	≥ 20	≥ 36	≥ 16	≥ 20	≥ 30	≥ 20	≥ 15	-
Rabbit IgG (mg/mL)	≥ 20	≥ 36	≥ 16	≥ 20	≥ 30	≥ 20	≥ 15	-
Human IgA1 (mg/ml)	-	-	-	-	-	-	-	2-3

*Linear flow rate determined in 2 ml column with internal diameter of 1.5 cm.