

Keyhole Limpet Hemocyanin (KLH) Vaccine Antibody ELISA Kits

Keyhole limpet hemocyanin (KLH) is a large, multisubunit, oxygen-carrying, metalloprotein found in the hemolymph of the giant keyhole limpet, *Megathura crenulata*, that lives off the coast of California from Monterey Bay to Isla Asuncion off Baja California. Keyhole limpet hemocyanin is an extremely large, heterogeneous glycosylated protein consisting of subunits with a molecular weight of 350,000 and 390,000 in aggregates with molecular weights of 4,500,000-13,000,000. Each domain of a KLH subunit contains two copper atoms that together bind a single oxygen molecule (O₂). The KLH protein is potently immunogenic yet safe in humans and is therefore highly prized as a vaccine carrier protein. Keyhole limpet hemocyanin (KLH) is used extensively as a carrier protein in the production of antibodies for research, biotechnology and therapeutic applications. Haptens are substances with a low molecular weight such as peptides, small proteins and drug molecules that are generally not immunogenic and require the aid of a carrier protein to stimulate a response from the immune system in the form of antibody production. KLH is the most widely employed carrier proteins for this purpose.



KLH is being tested as a therapeutic vaccine for a variety of cancers, including non-Hodgkins lymphoma, cutaneous melanoma, breast and bladder cancer. These vaccines use specific tumor-associated antigens (Haptens) conjugated to KLH to stimulate the body's immune system to generate anti-tumor immune responses which can destroy tumor cells. The KLH carrier protein is responsible for conferring immunogenicity to the tumor antigens in these vaccines. The rapidly growing interest in therapeutic vaccines (i.e. active immunotherapies) for cancer and the documented efficacy of KLH as a superior carrier protein for cancer vaccines are creating a significant biopharmaceutical market for KLH formulations. Highly purified, clinical grade preparations of KLH, vacmune or immunothel, have been made available by Biosyncorp.

The **innate immune system**, also known as non-specific immune system and first line of defense, comprises the cells and mechanisms that defend the host from infection by other organisms in a non-specific manner. This means that the cells of the innate system recognize and respond to pathogens in a generic way, but unlike the adaptive immune system, it does not confer long-lasting or protective immunity to the host. Innate immune systems provide immediate defense against infection, and are found in all classes of plant and animal life. The basal level of ant-KLH IgG and IgM differs under normal and disease conditions.

The major functions of the vertebrate innate immune system include:

- Recruiting immune cells to sites of infection, through the production of chemical factors, including specialized chemical mediators, called cytokines.
- Activation of the complement cascade to identify bacteria, activate cells and to promote clearance of dead cells or antibody complexes.
- The identification and removal of foreign substances present in organs, tissues, the blood and lymph, by specialised white blood cells.
- Activation of the adaptive immune system through a process known as antigen presentation.
- Acting as a physical and chemical barrier to infectious agents.

KLH is also used as model antigen to investigate the effect of adjuvants or to test the integrity of the immune functions. ADI has developed ELISA kits to accurately measure the antibody to KLH (IgG and IgM) or Vacmune/Immucothel (manufactured by Biosyn for clinical applications) in various animals, monkey and human samples. These kits will help assess the efficacy of antigen-KLH conjugate, dose response, effects of adjuvant and overall efficacy of a given vaccine

KLH vaccine Related ELISA kits

Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#	Antibody Type IgA Cat#
KLH Vaccine (antibody) ELISA kits	Human	700-140-KLG	700-145-KLM	
	Mouse	700-130-KLM		
	Rabbit	700-110-KLR		
	Goat	700-100-KLG		
	Chicken	700-120-KLC		
	Monkey	700-170-KLG	700-180-KLM	
	Canine	700-195-KLG	700-190-KLM	

KLH vaccine Related Antibodies and Reagentes kits

Item	Catalog#	Product Description	Product Type
KLH protein and antibodies	KLH11-G	Keyhole Limpet Hemocyanin (KLH)-Agarose affinity gel for removing KLH antibodies	Aff support
	KLH12-M	Monoclonal Anti-KLH (keyhole leimpet hemocyanin) Ascites	Antibodies
	KLH13-S	Goat Anti-KLH (keyhole limpet hemocyanin) antiserum #3	Antiserum
	KLH14-S	Rabbit Anti-KLH (keyhole limpet hemocyanin) antiserum #4	Antiserum
	KLH15-S	Chicken Anti-KLH (keyhole limpet hemocyanin) antiserum #5	Antiserum