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ProductInformation

MONOCLONAL ANTI-HUMAN PLACENTAL ALKALINE PHOSPHATASE - AGAROSE
CLONE 8B6
Purified Mouse Immunoglobulin

Product No. **A 2080**
Store at 2-8 °C

Product Description

Monoclonal Anti-Human Placental Alkaline Phosphatase (mouse IgG2a isotype) is derived from the 8B6 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from immunized BALB/c mice. Whole human epidermoid carcinoma cell line expressing placental alkaline phosphatase was used as the immunogen.[1] The isotype is determined using Sigma ImmunoType™ Kit (Product Code ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Product Code ISO-2). The immunoadsorbent is composed of purified monoclonal antibody to human placental alkaline phosphatase coupled to cyanogen bromide-activated agarose. Purified monoclonal antibody is prepared by High Performance Affinity Chromatography (Protein A column). The purified immunoglobulin is then immobilized on agarose, at 2 mg antibody per ml bed volume.

Monoclonal Anti-Human Placental Alkaline Phosphatase (hPLAP) reacts with both Regan and Nagao isozymes of human placental alkaline phosphatase (hPLAP, 130 kDa, 67/130 kDa in SDS gels).[1] The antibody binds to hPLAP with an affinity constant of 5×10^9 L/M in RIA.[1] It does not react with PLAP-like enzymes.

Alkaline Phosphatase (AP) is a broad and general term associated with non-specific phosphomonoesterases, with optimal activity at alkaline pH. Alkaline phosphatase in extracts of human tissues and in serum displays considerable heterogeneity, with respect to net molecular charge, size and antigenic distinction.[2] Human placental alkaline phosphatase (EC 3.1.3.1; hPLAP), an isoenzyme of the AP group of enzymes, is ordinarily synthesized in the placental syncytio-trophoblast, becoming detectable in maternal circulation after the twelfth week of pregnancy.[3] Small amounts of hPLAP are also found in the endocervix, fallopian tubes and lung. Very small amounts of heat-stable AP resembling hPLAP (hPLAP-like AP) are expressed in the testis, thymus and in rare colon epithelial cells.

Placental alkaline phosphatase differs from the alkaline phosphatases of bone, liver and kidney, in the relative rate of hydrolysis of various orthophosphate and pyrophosphate substrates, and in its greater degree of inhibition by L-phenylalanine and lower inhibition by L-homoarginine or levamisole. These characteristics of placental phosphatase are shared by the alkaline phosphatase of small intestine, indicating a considerable similarity between the substrate- and ligand-binding sites of the two isoenzymes.[3] The human alkaline phosphatases constitute a system of multiple molecular forms of enzymes in which heterogeneity is partly due to genetic factors and partly to post-translational modifications, such as the modulation of enzyme protein production by inducers such as corticosteroids, butyrate, and sodium chloride. The allelozymes of placental phosphatase have characteristic electrophoretic mobilities under defined conditions. A dimeric structure of placental phosphatase has been inferred from the presence of three-membered sets of isoenzymes in placental extracts from subjects who are heterozygous at the placental phosphatase locus. The discovery of the "Regan" AP isoenzyme, with the properties of hPLAP, in the serum of a patient with terminal bronchogenic cancer, initiated the interest in this antigen as an oncodevelopmental marker. Since then, the presence of hPLAP and hPLAP-like AP has been described in sera and tumor tissue of patients suffering from various types of cancer. Despite the continued interest in hPLAP as a potential tumor marker, it has not been widely used in the routine clinical laboratory, mainly because of the low overall specificity attained by methodologies such as heat-inactivation and sensitivity to L-phenylalanine. The use of polyclonal anti-hPLAP antibodies was hampered by the cross-reactivity of these antibodies with the common epitopes of intestinal AP. Reproducible and accurate immunological quantification of hPLAP became possible with the advent of hPLAP-specific monoclonal antibodies. The use of monoclonal antibodies as reagents has greatly improved the sensitivity of the tests used to distinguish

placental isozymes from their tumor cell counterparts, offering the hope of realizing the diagnostic potential of the PLAPs. The secreted form of placental alkaline phosphatase gene has been cloned into expression vectors.[4,5] These vectors have been used to express foreign proteins as fusions to the placental alkaline phosphatase thus enabling the quick detection of products by assaying enzymatic activity.[6,7]

Monoclonal Anti-Human Placental Alkaline Phosphatase - Agarose may be used for immunoprecipitation and immunoaffinity purification procedures of human placental alkaline phosphatase either natural or recombinant.

Reagents
The product is supplied as a 1:1 suspension in 0.01 M PBS, pH 7.4, containing 15 mM sodium azide as preservative.

Precautions
Due to the sodium azide content a material safety sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous and safe handling practices.

Product Profile
One milliliter settled resin of Monoclonal Anti-Human Placental Alkaline Phosphatase - Agarose binds at least 0.5 mg of human placental alkaline phosphatase.

In order to obtain best results, it is recommended that each user determine the optimal working dilution for individual applications by titration assay.

Storage
For continuous use, store at 2-8 °C. Do Not Freeze.

References

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3. Moss, D., Clin. Chem., **28**, 2007 (1982).
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6. Yayon, A., et al., EMBO J., **11**, 1885 (1992).
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