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Product Information

MONOCLONAL ANTI-FOLIC ACID CLONE VP-52 Mouse Ascites Fluid

Product Number **F 5766**

Product Description

Monoclonal Anti-Folic Acid (mouse IgG2b isotype) is derived from the hybridoma produced from the fusion of mouse myeloma cells and splenocytes of an immunized mouse. 5-Methyltetrahydrofolic acid (5MTHFA) conjugated to KLH was used as the immunogen. 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).

Monoclonal Anti-Folic Acid is specific for folate and recognizes an epitope present on both the biologically active analog 5MTHFA and folic acid. The antibody reacts with folic acid or 5MTHFA when they are free or bound to a carrier such as KLH or BSA. It will bind their natural form as is found in human plasma and serum when bound to the endogenous folate binder. There is no cross reaction with tetrahydrofolic acid (THFA), folinic acid (FNA), dihydrofolic acid (FAH₂, citrovorum factor, leucovorin), nor with vitamin B₁₂.

Vitamin B₁₂ (cobalamin) and folic acid (pteroylglutamic acid) are essential constituents for normal growth of mammalian cells. The normal range in serum is 3-16 ng/ml for folate and 0.2-0.9 ng/ml for vitamin B₁₂. Animals derive their vitamin B₁₂ only from bacterial sources, as it is not found in the plant kingdom. For this reason vitamin B₁₂ deficiency is common among strict vegetarians. Almost all animal tissues contain vitamin B₁₂.

The most common form of vitamin B₁₂ deficiency is the lack of intrinsic factor, which is necessary for vitamin B₁₂ adsorption in the small intestine. This will lead to pernicious anemia. Other less common causes of vitamin B₁₂ deficiency are abnormal intestinal bacterial flora, infestation with fish tapeworm, and gastric surgery involving the ileum. Folic acid deficiencies are common in pregnant women, alcoholics, those whose diets do not include raw fruits and vegetables, and people with structural or functional damage to the small intestine. Vitamin B₁₂ and folic acid are metabolically interrelated.

The enzyme methionine synthetase, which catalyzes the conversion of homocysteine to methionine, requires vitamin B₁₂ and 5-methyltetrahydrofolic acid (5MTHFA) as cofactors. In the absence of vitamin B₁₂, 5MTHFA cannot be converted to tetrahydrofolic acid and enter the metabolic pool of 1-carbon fragment acceptors.

Since this is the only known metabolic pathway involving 5MTHFA in man, there will be a decrease in the availability of other folic acid derivatives required for miscellaneous biosynthetic pathways. One of the most important of these involves thymidylate synthetase, an enzyme necessary for DNA synthesis.

Vitamin B₁₂ also functions as a cofactor in the methylmalonyl-CoA mutase reaction, which is important in both propionate and succinate metabolism.

Vitamin B₁₂ and folate deficiencies are the most common causes of megaloblastic anemia, abnormal hemopoiesis, interference in the maintenance of normal nerve tissue and general intracellular uptake and function disorders in humans. Elevated levels have been encountered in hepatic and neoplastic pathologies.

Vitamin B₁₂ and folate deficiencies are hematologically and clinically indistinguishable. It is therefore necessary to determine the level of vitamin B₁₂ in the serum and folate in serum and red blood cells to establish definitively the etiology of the megaloblastic anemia, since treatment of vitamin B₁₂ deficiency with folic acid can result in serious repercussions. Levels of vitamin B₁₂ in the serum can be determined either microbiologically by time consuming bioassays that may be affected by antimicrobial and antineoplastic agents or by competitive protein binding assays. In the binding assay natural protein binders are used, which even when they are highly purified might lead to erroneously high nondiagnostic results and necessitate the denaturing or at least the release of endogenous proteins by extreme treatments such as boiling or chemical digestion.

Reagents

The product is provided as ascites fluid containing 15 mM sodium azide as preservative

Precautions and Disclaimer

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

Storage/Stability

For continuous use, store at 2-8 °C for a maximum of one month. For extended storage, solution may be frozen in working aliquots. Repeated freezing and thawing is **not** recommended. If slight turbidity occurs upon prolonged storage, clarify by centrifugation before use.

Product Profile

A minimum working dilution of 1:500 is determined by an indirect ELISA using 3 µg/ml of folic acid-BSA conjugate for the coat. It has been noted that this antigen is most absorbed most effectively on polyvinyl microtiter plates.

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

Monoclonal Anti-Folic Acid may be used for the detection and quantitation of Folic Acid and 5MTHFA by indirect or competitive ELISA and RIA.

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