Monoclonal Mouse Anti-Human pS2 Protein
Clone BC04
Code No. M 7184
Edition 14.08.03

Intended use
For in vitro diagnostic use.
Monoclonal Mouse Anti-Human pS2 Protein, Clone BC04, is intended for use in immunocytochemistry. The antibody labels pS2 in breast carcinomas and may be a useful tool for the identification of breast and endothelial carcinomas (1, 2). Differential identification is aided by the results from a panel of antibodies. Interpretation must be made within the context of the patient’s clinical history and other diagnostic tests by a qualified pathologist.

Synonyms
Trefoil factor 1 (TFF1) (3).

Introduction
pS2 is a small secreted protein that belongs to the trefoil factor (TFF) protein family (3). This family of proteins is characterized by a clover leaf-like structure usually composed of 39 to 43 residues that is held together by three pairs of disulphide bonds (3, 4). Three trefoil peptides are currently recognized in humans: TFF1 (pS2), TFF2 (spasmolytic polypeptide) and TFF3 (intestinal trefoil factor). pS2 and TFF3 each have a single TFF domain and require homodimerization for activity, whereas TFF2 has two TFF domains and does not require dimerization for its activity (4). TFFs are normally synthesized in the gastrointestinal mucosa and the peptides are found in the intestinal tract within the ductal luminal cells of Brunner’s glands and in goblet cells near the surface of crypts. pS2 is also found within the stomach in mucous neck cells of the antrum and fundus and in the epithelium of the pancreas and gall bladder. The physiological functions of the TFF peptides can be divided into two broad categories: mucosal surface protection and repair after injury. pS2 was originally isolated from human breast carcinoma cell lines and pathologic expression of pS2 has been demonstrated in a variety of adenocarcinomas, especially those with a mucinous histology in breast, lung, endometrium, ovary, pancreas, stomach, and intestine (4).

Reagent provided
Monoclonal mouse antibody supplied in liquid form as purified IgG from ascitic fluid. In 0.05 mol/L Tris/HCl, 15 mmol/L NaNO3, 1% bovine serum albumin, pH 7.2.
Clone: BC04 (1). Isotype: IgG1, kappa.
Mouse IgG concentration: See label on vial.

Immunogen
pS2 protein purified from human breast cancer cell line MCF-7 (1).

Specificity
In an immunoradiometric assay, the antibody labelled the pS2 protein (1).

Precautions
1. For professional users.
2. This product contains sodium azide (NaNO3), a chemical highly toxic in pure form. At product concentrations, though not classified as hazardous, sodium azide may react with lead and copper plumbing to form highly explosive build-ups of metal azides. Upon disposal, flush with large volumes of water to prevent metal azide build-up in plumbing.
3. As with any product derived from biological sources, proper handling procedures should be used.

Storage
Store at 2-8 °C. Do not use after expiration date stamped on vial. If reagents are stored under any conditions other than those specified, the user must verify the conditions. There are no obvious signs to indicate instability of this product. Therefore, positive and negative controls should be run simultaneously with patient specimens. If unexpected staining is observed which cannot be explained by variations in laboratory procedures and a problem with the antibody is suspected, contact our Technical Services.

Specimen preparation
Paraffin sections: The antibody can be used for labelling paraffin-embedded tissue sections fixed in formalin. Pre-treatment of tissues with DakoCytomation Proteinase K, code No. S 3020, or heat-induced epitope retrieval is recommended. For heat-induced epitope retrieval, optimal results are obtained with DakoCytomation Target Retrieval Solution, pH 9.0, code No. S 2368, or DakoCytomation Target Retrieval Solution, code No. S 1700. Less optimal results are obtained with 10 mmol/L citrate buffer, pH 6.0. The following solution DakoCytomation Target Retrieval Solution, High pH, code No. S 3308, was found inefficient. The tissue sections should not dry out during the treatment or during the following immunocytochemical staining procedure.
Frozen sections and cell preparations: The antibody can be used for labelling acetone-fixed frozen sections.

Staining procedure
Dilution: Monoclonal Mouse Anti-Human pS2 Protein, code No. M 7184, may be used at a dilution range of 1:50-1:100 when applied on formalin-fixed, paraffin-embedded sections of human breast carcinoma and using 20 minutes heat-induced epitope retrieval in DakoCytomation Target Retrieval Solution, code No. S 1700, and 30 minutes incubation at room temperature with the primary antibody. Optimal conditions may vary depending on
specimen and preparation method, and should be determined by each individual laboratory. The recommended negative control is DakoCytomation Mouse IgG1, code No. X 0931, diluted to the same mouse IgG concentration as the primary antibody. Unless the stability of the diluted antibody and negative control has been established in the actual staining procedure, it is recommended to dilute these reagents immediately before use, or dilute in DakoCytomation Antibody Diluent, code No. S 0809. Positive and negative controls should be run simultaneously with patient specimen.

**Visualization:** DAKO LSAB+/- HRP kit, code No. K 0679, and DAKO EnVision+/-HRP kits, code Nos. K 4004 and K 4006, are recommended. For frozen sections and cell preparations, the DakoCytomation APAAP kit, code No. K 0670, is a good alternative if endogenous peroxidase staining is a concern. Follow the procedure enclosed with the selected visualization kit.

**Performance characteristics**

Cells labelled by the antibody display a cytoplasmic staining pattern.

**Normal tissues:** Normal gastric mucosa is labelled by the antibody throughout the superficial and foveolar epithelium of antrum and body, as well as in mucopoeptic cells of the neck (5). In normal endometrium the antibody labels glandular cells during the proliferative phase, whereas in the secretory phase the glandular cells are weakly labelled. Stromal cells are almost negative throughout the menstrual cycle (2).

**Abnormal tissues:** In 50 gastric carcinomas, including 28 intestinal carcinomas, 18 diffuse carcinomas and 4 unclassifiable carcinomas, the antibody labelled 15/28 (54%) intestinal carcinomas, 16/18 (89%) diffuse and 2/4 (50%) of the unclassifiable carcinomas.

In 11 endometrial hyperplasias and 64 endometrial carcinomas, all 11 hyperplasias demonstrated strong labelling by the antibody and the antibody labelled 45/64 (70%) of the carcinomas. In particular, all premenopausal patients of the carcinoma group were positive for pS2 protein (2).

**References**