anti-p40 (SP225) Rabbit Monoclonal Primary Antibody

REF 790-7219

09929649001

IVD Σ 50

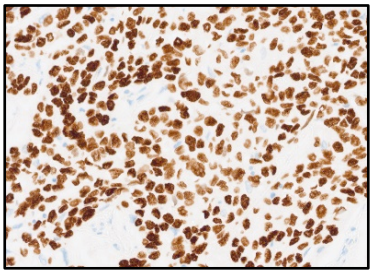

Figure 1. Anti-p40 (SP225) antibody staining of lung squamous cell carcinoma.

INTENDED USE

Anti-p40 (SP225) Rabbit Monoclonal Primary Antibody is intended for laboratory use in the qualitative immunohistochemical detection of the p40 protein by light microscopy in formalin-fixed, paraffin-embedded tissue stained on a BenchMark IHC/ISH instrument.

This product should be interpreted by a qualified pathologist in conjunction with histological examination, relevant clinical information, and proper controls.

This antibody is intended for in vitro diagnostic (IVD) use.

SUMMARY AND EXPLANATION

Anti-p40 (SP225) Rabbit Monoclonal Primary Antibody (anti-p40 (SP225) antibody) is a rabbit monoclonal antibody raised for the detection of the p40 isoform of the p63 protein. The p63 protein is a member of the p53 family of transcription factors.[1] Five isoforms of p63 (α, β, γ, δ, ε) can be produced due to alternative splicing and an additional 5 isoforms lacking the N-terminal transactivation domain (ΔNp63/p40 α, β, γ, δ, ε) can be produced due to the presence of a second promoter site within the gene.[1,2]

p40 is expressed in the basal or progenitor cells of epithelial tissues and glandular structures including the prostate and bronchi.[3,4] In the prostate, p40 is expressed in the basal cells of almost all normal and benign glands but is not present in the neuroendocrine or luminal secretory cells.[4,5] The presence of basal cells, as marked by the presence of p40 staining, is a feature of normal and benign prostatic processes.[5] The absence of basal cells is a hallmark of prostatic malignancies.[6] The immunohistochemistry (IHC)-based detection of p40 in prostatic basal cells, using anti-p40 (SP225) antibody can be used to aid in the differentiation of benign and malignant prostate lesions.

In lung, p40 is expressed in the basal cell compartment.[3] It has been speculated that squamous cell carcinoma (SCCA) of the lung originates from the basal compartment.[7] Malignant squamous differentiation is characteristic of the SCCA subtype of non-small cell lung cancer (NSCLC).[8] Thus, the overexpression of p40 in NSCLC can be an indicator of malignant squamous differentiation.[8,9,10] The adenocarcinoma (ADC) subtype of NSCLC typically does not exhibit p40 expression like SCCA.[8] Thus, detection of p40 using anti-p40 (SP225) antibody may be used as a marker of squamous differentiation to aid in the distinction between pulmonary SCCA and ADC.

In contrast to the anti-p63 antibody (clone 4A4) that recognizes p63 and p40 variants, anti-p40 antibodies recognize only the p40 isoform.[9] It is recommended to use an anti-p40 antibody to aid in the distinction between pulmonary SCCA and ADC.[10]

This antibody may be used as part of a panel of IHC studies.

The detection of p40 by immunohistochemistry (IHC) with the anti-p40 (SP225) antibody may be used for the detection of basal cells to aid in the differentiation of benign and malignant prostate lesions; and as a marker of squamous differentiation to aid in the distinction between pulmonary squamous cell carcinoma (SCCA) and adenocarcinoma (ADC).

PRINCIPLE OF THE PROCEDURE

Anti-p40 (SP225) binds to the p40 glycoprotein in formalin-fixed paraffin-embedded (FFPE) tissue sections. This antibody can be visualized using OptiView DAB IHC Detection Kit (Cat. No. 760-700 / 06396500001) or *ultra*View Universal DAB Detection Kit (Cat. No. 760-500 / 05269806001). Refer to the respective method sheet for further information.

MATERIAL PROVIDED

Anti-p40 (SP225) antibody contains sufficient reagent for 50 tests.

One 5 mL dispenser of anti-p40 (SP225) contains approximately 1 µg of rabbit monoclonal antibody.

The antibody is diluted in Tris-HCl with carrier protein and 0.10% ProClin 300, a preservative.

Specific antibody concentration is approximately 0.2 µg/mL. There is no known non-specific antibody reactivity observed in this product.

Anti-p40 (SP225) is a recombinant rabbit monoclonal antibody produced as a purified cell culture supernatant.

Refer to the appropriate VENTANA detection kit method sheet for detailed descriptions of: Principle of the Procedure, Material and Methods, Specimen Collection and Preparation for Analysis, Quality Control Procedures, Troubleshooting, Interpretation of Results, and Limitations.

MATERIALS REQUIRED BUT NOT PROVIDED

Staining reagents, such as VENTANA detection kits and ancillary components, including negative and positive tissue control slides, are not provided.

Not all products listed in the method sheet may be available in all geographies. Consult your local support representative.

The following reagents and materials may be required for staining but are not provided:

1. Recommended control tissue
2. Microscope slides, positively charged
3. Rabbit Monoclonal Negative Control Ig (Cat. No. 790-4795 / 06683380001)
4. OptiView DAB IHC Detection Kit (Cat. No. 760-700 / 06396500001)
5. *ultra*View Universal DAB Detection Kit (Cat. No. 760-500 / 05269806001)
6. EZ Prep Concentrate (10X) (Cat. No. 950-102 / 05279771001)
7. Reaction Buffer Concentrate (10X) (Cat. No. 950-300 / 05353955001)
8. LCS (Predilute) (Cat. No. 650-010 / 05264839001)
9. ULTRA LCS (Predilute) (Cat. No. 650-210 / 05424534001)
10. Cell Conditioning Solution (CC1) (Cat. No. 950-124 / 05279801001)
11. ULTRA Cell Conditioning Solution (ULTRA CC1) (Cat. No. 950-224 / 05424569001)
12. Hematoxylin II (Cat. No. 790-2208 / 05277965001)
13. Bluing Reagent (Cat. No. 760-2037 / 05266769001)
14. General purpose laboratory equipment
15. BenchMark IHC/ISH instrument

STORAGE AND STABILITY

Upon receipt and when not in use, store at 2-8 °C. Do not freeze.

To ensure proper reagent delivery and the stability of the antibody, replace the dispenser cap after every use and immediately place the dispenser in the refrigerator in an upright position.

Every antibody dispenser is expiration dated. When properly stored, the reagent is stable to the date indicated on the label. Do not use reagent beyond the expiration date.

SPECIMEN PREPARATION

Routinely processed FFPE tissues are suitable for use with this primary antibody when used with VENTANA detection kits and BenchMark IHC/ISH instruments. The recommended tissue fixative is 10% neutral buffered formalin.[11] Sections should be cut at approximately 4 µm in thickness and mounted on positively charged slides. Slides should be stained immediately, as antigenicity of cut tissue sections may diminish over time.

It is recommended that positive and negative controls be run simultaneously with unknown specimens.

WARNINGS AND PRECAUTIONS

1. For in vitro diagnostic (IVD) use.
2. For professional use only.
3. Do not use beyond the specified number of tests.
4. ProClin 300 solution is used as a preservative in this reagent. It is classified as an irritant and may cause sensitization through skin contact. Take reasonable precautions when handling. Avoid contact of reagents with eyes, skin, and mucous membranes. Use protective clothing and gloves.
5. Positively charged slides may be susceptible to environmental stresses resulting in inappropriate staining. Ask your Roche representative for more information on how to use these types of slides.
6. Materials of human or animal origin should be handled as biohazardous materials and disposed of with proper precautions. In the event of exposure, the health directives of the responsible authorities should be followed.[12,13]
7. Avoid contact of reagents with eyes and mucous membranes. If reagents come in contact with sensitive areas, wash with copious amounts of water.
8. Avoid microbial contamination of reagents as it may cause incorrect results.
9. For further information on the use of this device, refer to the BenchMark IHC/ISH instrument User Guide, and instructions for use of all necessary components located at navifyportal.roche.com.
10. Consult local and/or state authorities with regard to recommended method of disposal.
11. Product safety labeling primarily follows EU GHS guidance. Safety data sheet available for professional user on request.
12. To report suspected serious incidents related to this device, contact the local Roche representative and the competent authority of the Member State or Country in which the user is established.

This product contains components classified as follows in accordance with the Regulation (EC) No. 1272/2008:

Table 1. Hazard information.

Hazard	Code	Statement
Warning 	H317	May cause an allergic skin reaction.
	H412	Harmful to aquatic life with long lasting effects.
	P261	Avoid breathing mist or vapours.
	P273	Avoid release to the environment.
	P280	Wear protective gloves.
	P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
	P362 + P364	Take off contaminated clothing and wash it before reuse.
	P501	Dispose of contents/ container to an approved waste disposal plant.

This product contains CAS # 55965-84-9, a reaction mass of: 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1).

STAINING PROCEDURE

VENTANA primary antibodies have been developed for use on BenchMark IHC/ISH instruments in combination with VENTANA detection kits and accessories. Refer to the tables below for recommended staining protocols.

This antibody has been optimized for specific incubation times, but the user must validate results obtained with this reagent.

The parameters for the automated procedures can be displayed, printed and edited according to the procedure in the instrument User Guide. Refer to the appropriate VENTANA detection kit method sheet for more details regarding immunohistochemistry staining procedures.

For more details on the proper use of this device, refer to the inline dispenser method sheet associated with P/N 790-7219.

Table 2. Recommended staining protocol for anti-p40 (SP225) antibody with OptiView DAB IHC Detection Kit on BenchMark IHC/ISH instruments.

Procedure Type	Method	
	GX	ULTRA or ULTRA PLUS [a]
Deparaffinization	Selected	
Cell Conditioning (Antigen Unmasking)	CC1, 64 minutes	ULTRA CC1 64 minutes, 100 °C
Pre Primary Peroxidase Inhibitor	Selected	
Antibody (Primary)	32 minutes, 37 °C	32 minutes, 36 °C
OptiView HQ Linker	8 minutes (default)	
OptiView HRP Multimer	8 minutes (default)	
Counterstain	Hematoxylin II, 4 minutes	
Post Counterstain	Bluing, 4 minutes	

[a] Concordance was demonstrated between BenchMark ULTRA and BenchMark ULTRA PLUS instruments using representative assays.

Table 3. Recommended staining protocol for anti-p40 (SP225) antibody with *ultra*View Universal DAB Detection Kit on BenchMark IHC/ISH instruments.

Procedure Type	Method	
	GX	ULTRA or ULTRA PLUS [a]
Deparaffinization	Selected	Selected
Cell Conditioning (Antigen Unmasking)	CC1, Standard	ULTRA CC1 64 minutes, 95 °C
Antibody (Primary)	32 minutes, 37 °C	32 minutes, 36 °C
Counterstain	Hematoxylin II, 4 minutes	
Post Counterstain	Bluing, 4 minutes	

[a] Concordance was demonstrated between BenchMark ULTRA and BenchMark ULTRA PLUS instruments using representative assays.

Due to variation in tissue fixation and processing, as well as general lab instrument and environmental conditions, it may be necessary to increase or decrease the primary antibody incubation, cell conditioning or protease pretreatment based on individual specimens, detection used, and reader preference. For further information on fixation variables, refer to "Immunohistochemistry Principles and Advances."[14]

NEGATIVE REAGENT CONTROL

In addition to staining with anti-p40 (SP225) antibody, a second slide should be stained with the appropriate negative control reagent.

POSITIVE TISSUE CONTROL

A tissue control must be included with each staining run. Optimal laboratory practice is to include a positive control section on the same slide as the test tissue. This helps identify any failures applying reagents to the slide. Tissue with weak positive staining is best suited for quality control. Control tissue may contain both positive and negative staining elements and serve as both the positive and negative control. Control tissue should be fresh autopsy, biopsy, or surgical specimen, prepared or fixed as soon as possible in a manner identical to test sections.

Known positive tissue controls should be utilized only for monitoring performance of reagents and instruments, not as an aid in determining specific diagnosis of test samples. If the positive tissue controls fail to demonstrate positive staining, results of the test specimen should be considered invalid.

Examples of positive control tissues for this antibody are normal prostate, normal tonsil and lung squamous cell carcinoma.

STAINING INTERPRETATION / EXPECTED RESULTS

The cellular staining pattern for anti-p40 (SP225) antibody is nuclear.

SPECIFIC LIMITATIONS

Focal and weak positivity was observed in < 15% of lung adenocarcinomas with the anti-p40 (SP225) antibody. In the scientific literature, it has been recommended that the cut-off value for p40 positivity in SCCA should be staining observed in more than 50% of tumor nuclei.10

OptiView DAB IHC Detection Kit is generally more sensitive than *ultra*View Universal DAB Detection Kit. The user must validate the results obtained with this reagent and detection systems.

All assays might not be registered on every instrument. Please contact your local Roche representative for more information.

PERFORMANCE CHARACTERISTICS

ANALYTICAL PERFORMANCE

Staining tests for sensitivity, specificity, and precision were conducted and the results are listed below.

Sensitivity and Specificity

Table 4. Sensitivity/Specificity of anti-p40 (SP225) antibody was determined by testing FFPE non-neoplastic tissues.

Tissue	# positive / total cases	Tissue	# positive / total cases
Cerebrum	0/3	Esophagus [c]	4/4
Cerebellum	0/4	Stomach	0/4
Brain	0/1	Small intestine	0/4
Adrenal gland [a]	0/4	Colon	0/4
Ovary	0/4	Rectum	0/1
Pancreas	0/4	Liver	0/4
Lymph Node	0/1	Salivary gland [b]	4/4
Parathyroid gland	0/3	Kidney	0/4
Pituitary gland	0/3	Prostate [a,e]	7/7
Testis	0/4	Bladder [f]	3/3
Thyroid	0/4	Endometrium	1/3
Breast [b]	8/8	Placenta	0/3
Spleen	0/3	Cervix [c]	2/3
Tonsil [c]	2/3	Skeletal muscle	0/3
Thymus [d]	3/3	Skin [g]	4/4
Bone marrow	0/3	Nerve	0/3
Lung	0/14	Mesothelium	0/3
Heart	0/3	Myometrium	0/2

[a] Tissue evaluated includes normal and hyperplasia.
[b] Myoepithelial cells staining
[c] Squamous epithelium staining
[d] Epithelial cell staining
[e] Basal cell staining
[f] Urothelial cell staining
[g] Squamous epidermis staining

Table 5. Sensitivity/Specificity of anti-p40 (SP225) antibody was determined by testing a variety of FFPE neoplastic tissues.

Pathology	# positive / total cases
Astrocytoma (Brain)	0/1
Meningioma, fibroblastic (Brain)	0/2
Anaplastic meningioma (Brain)	0/1
Adenocarcinoma (Head and neck)	0/1
Squamous cell carcinoma (Head and neck)	1/1
Nasopharyngeal carcinoma, NPC (Head and neck, nasopharynx)	1/1
Pleomorphic adenoma (Head and neck, salivary gland)	1/1
Adenoid cystic carcinoma (Head and neck, salivary gland)	0/1
Adenoma (Adrenal gland)	0/1
Adrenocortical carcinoma (Adrenal gland)	0/1
Granulosa cell tumor (Ovary)	0/1
Adenocarcinoma (Ovary)	0/2
Adenocarcinoma (Pancreas)	0/1
Seminoma (Testis)	0/2
Adenoma (Thyroid)	0/3
Follicular carcinoma (Thyroid)	0/1
Papillary carcinoma (Thyroid)	0/1
Fibroadenoma (Breast)	2/2
Ductal carcinoma in situ (Breast) [a]	14/14
Invasive ductal carcinoma (Breast)	7/82
Invasive lobular carcinoma (Breast)	0/9
Metastatic breast ductal carcinoma (Lymph node)	0/1
Mucinous adenocarcinoma (Breast)	0/1
Small cell carcinoma (Lung)	0/1
Squamous cell carcinoma (Lung)	100/105
Adenocarcinoma (Lung)	13/98
Metastatic cancer (Lung)	0/1
Squamous cell carcinoma (Esophagus)	3/3
Metastatic esophagus squamous cell carcinoma (Lymph node)	1/1
Adenocarcinoma (Stomach)	0/3
Adenoma (Small intestine)	0/1
Adenocarcinoma (Small intestine)	0/1
Adenoma (Colon)	0/1
Adenocarcinoma (Colon)	0/3
Metastatic colon signet ring cell carcinoma (Ovary)	0/1
Metastatic colon adenocarcinoma (Liver)	0/1
Hepatocellular carcinoma (Liver)	0/4
Clear cell carcinoma (Kidney)	0/2
Adenocarcinoma (Rectum)	0/3
Adenocarcinoma (Prostate)	1/77
Sarcomatoid carcinoma (Prostate)	0/1

Pathology	# positive / total cases
Squamous cell carcinoma (Cervix)	2/2
Adenocarcinoma (Endometrium)	0/2
Squamous cell carcinoma (Skin)	1/1
Melanoma	0/1
Schwannoma (Nerve Sheath)	0/1
Leiomyoma (Smooth Muscle)	0/1
Hodgkin lymphoma	0/1
Anaplastic large cell lymphoma	0/1
B-cell Lymphoma; NOS	0/1
Urothelial carcinoma (Bladder)	2/2
Osteosarcoma (Bone)	0/1

[a] Myoepithelial cell staining

Precision

Precision studies for anti-p40 (SP225) antibody were completed to demonstrate:

- Between lot precision of the antibody.
- Within run and between day precision on a BenchMark ULTRA instrument.
- Between instrument precision on the BenchMark GX, BenchMark ULTRA / BenchMark ULTRA PLUS instrument.
- Between platform precision between the BenchMark GX, BenchMark ULTRA / BenchMark ULTRA PLUS instrument.

All studies met their acceptance criteria.

Precision on the BenchMark ULTRA PLUS instrument was demonstrated using representative assays. Studies included Within-run Repeatability, Between-day and Between-run Intermediate Precision. All studies met their acceptance criteria.

CLINICAL PERFORMANCE

Clinical performance data relevant to the intended purpose of anti-p40 (SP225) antibody were assessed by systematic review of the literature. The data gathered support the use of the device in accordance with its intended purpose.

REFERENCES

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NOTE: A point (period/stop) is always used in this document as the decimal separator to mark the border between the integral and the fractional parts of a decimal numeral. Separators for thousands are not used.

The summary of safety and performance can be found here:

https://ec.europa.eu/tools/eudamed

Symbols

Ventana uses the following symbols and signs in addition to those listed in the ISO 15223-1 standard (for USA: see elabdoc.roche.com/symbols for more information).

GTIN	Global Trade Item Number
Rx only	For USA: Caution: Federal law restricts this device to sale by or on the order of a physician.

REVISION HISTORY

Rev	Updates
B	Updates to Warnings and Precautions section. Updated to current template.

INTELLECTUAL PROPERTY

For USA: Rx only

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