

1.00251.0001

Microscopy

Reticulin silver plating kit acc. to Gordon & Sweets

for the detection of reticular fibers in histological tissue specimens

For professional use only



In Vitro Diagnostic Medical Device



Intended purpose

This "Reticulin silver plating kit acc. to Gordon & Sweets - for the detection of reticular fibers in histological tissue specimens" is used for human-medical cell diagnosis and serves the purpose of the histological investigation of sample material of human origin. It is a ready-to-use staining kit designed to enhance the visibility of target structures (by fixing, embedding, staining, counterstaining, mounting) in histological specimen materials, for example histological sections of e.g. the kidney, the heart, or the liver in combination with other in vitro diagnostica from our portfolio.

The Reticulin silver plating kit is used to identify reticular fibers in histological tissue specimens.

Unstained structures are relatively low in contrast and are extremely difficult to distinguish under the light microscope. The images created using the staining solutions help the authorized and qualified investigator to better define the form and structure in such cases. Further examinations may be necessary to reach a definitive diagnosis.

Principle

Reticulin fibers, on which metallic silver is able to precipitate, can be visualized by means of silver salts.

The material is first oxidized with potassium permanganate. Metallic silver is formed from the ammoniacal silver nitrate solution, which precipitates as a brownish deposit on the target structures. Formaldehyde, which is a strong reducing agent, accelerates the process. When toning with gold chloride, the metallic silver is transferred to the more stable gold compound, leading to more intensive results.

Nonspecific silver is bound to sodium thiosulfate.

Sample material

The tissue specimens are fixed with neutral buffered formalin

A layer thickness of 4 - 5 µm is recommended for iliac crest biopsies and vertebral bodies, and of 2 - 3 µm for other tissues

Reagents

Cat. No. 1.00251.0001

Reticulin silver plating kit acc. to Gordon & Sweets

Package components:

The staining kit contains

Reagent 1: Potassium permanganate solution	16 ml
Reagent 2: Sulfuric acid	16 ml
Reagent 3: Oxalic acid	30 ml
Reagent 4: Ammonium iron(III) sulfate solution	30 ml
Reagent 5*: Ammoniacal silver nitrate solution	30 ml
Reagent 6: Formaldehyde solution	30 ml
Reagent 7: Gold chloride solution	30 ml
Reagent 8: Sodium thiosulfate solution	30 ml

* Important note:

The pipette kit supplied with the test set is screwed onto the glass bottle (Reagent 5) before first use. In order to avoid contamination, it should not be removed afterwards (silver nitrate solution is very reactive). The bottle should be stored upright with the other test set components according to specification.

Also required:

Cat. No. 100121	Nuclear fast red-aluminum sulfate solution 0.1 % for microscopy	500 ml
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Sample preparation

The sampling must be performed by qualified personnel.

All samples must be treated using state-of-the-art technology.

All samples must be clearly labeled.

Suitable instruments must be used for taking samples and their preparation.

Follow the manufacturer's instructions for application / use.

When using the corresponding auxiliary reagents, the corresponding instructions for use must be observed.

Deparaffinize and rehydrate sections in the conventional manner.

Reagent preparation

The solutions used for staining are ready-to-use, dilution of the solutions is not necessary and merely produces a deterioration of the staining result and their stability.

Procedure

Staining with the reagents 1 - 8 is performed on a staining rack made of plexiglass or coated with plastic.

Deparaffinize histological slides in the conventional manner and rehydrate in a descending alcohol series.

The reagents are dripped onto the section one after another so as to cover the section completely.

Rinse with distilled water using a washing bottle.

Do not use metal tweezers and do not allow any other metal objects to come into contact with the slides.

The stated times should be adhered to in order to guarantee an optimal staining result.

Slide with histological specimen		
Distilled water		10 sec
Reagent 1 (Potassium permanganate solution) and Reagent 2 (Sulfuric acid) drip one after the other	4 drops of each	5 min
Distilled water		10 sec
Reagent 3 (Oxalic acid)	8 drops	2 min
Distilled water		10 sec
Reagent 4 (Ammonium iron(III) sulfate solution)	8 drops	2 min
Distilled water		10 sec
Reagent 5 (Silver nitrate solution)	4 drops	2 min
Distilled water		10 sec
Reagent 6 (Formaldehyde solution)	8 drops	2 min
Distilled water		10 sec
Reagent 7 (Gold chloride solution)	8 drops	2 min
Distilled water		10 sec
Reagent 8 (Sodium thiosulfate solution)	8 drops	2 min
Distilled water		10 sec
Ethanol 70 %		1 min
Ethanol 96 %		1 min
Ethanol 100 %		1 min
Ethanol 100 %		1 min
Xylene or Neo-Clear®		5 min
Xylene or Neo-Clear®		5 min
Mount the Neo-Clear®-wet slides with Neo-Mount® or the xylene-wet slides with Entellan® new and cover glass.		

After dehydration (ascending alcohol series) and clarification with xylene or Neo-Clear®, histological slides can be covered with non-aqueous mounting agents (e.g. Entellan® new, Neo-Mount®) and a cover glass and can then be stored.

Result

Reticular fibers

black

Procedure "Nuclear staining with nuclear fast red solution"

subsequent to silver impregnation on the staining rack or in the staining cell

Nuclear fast red-aluminum sulfate solution 0.1 %	3 min
Distilled water	10 sec
Dehydrate, clear, and wet-mount the sections in the conventional manner.	

Result

Reticular fibers	black
Nuclei	red
Background	red
Collagen	red

Trouble-shooting

Silver-staining techniques can be difficult and require special care during the procedure.

Microscopic image	Possible cause	Remedy
Poor visualization of reticulin fibers	Gold chloride solution incubated too long	See "Procedure"
Poor visualization of reticulin fibers	Slide insufficiently covered with reagent	Increase the number of drops or use a histomarker
Poor visualization of reticulin fibers	Sections too thin	See "Sample material"
Poor or no visualization of reticulin fibers	Incorrect storage / shelf-life of the kit	Observe storage and shelf-life
Unclean slide / precipitation	Insufficiently rinsed	See "Procedure"
Reticulin fibers stained too intensely	Gold chloride solution not incubated long enough	See "Procedure"
Reticulin fibers stained too intensely	Sections too thick	See "Sample material"

Technical notes

The microscope used should meet the requirements of a medical diagnostic laboratory.

When using histoprocessor systems or automatic staining systems, please follow the instructions for use supplied by the supplier of the system and software.

Diagnostics

Diagnoses are to be made only by authorized and qualified personnel. Valid nomenclatures must be used.

This method can be supplementarily used in human diagnostics. Further tests must be selected and implemented according to recognized methods.

Suitable controls (e.g. ISOSLIDE® Reticulin, Cat. No. 1.00361.0001) should be conducted with each application in order to avoid an incorrect result.

Storage

Store the Reticulin silver plating kit acc. to Gordon & Sweets - for the detection of reticular fibers in histological tissue specimens at +2 °C to +8 °C.

The pipette kit supplied with the test set is screwed onto the glass bottle (Reagent 5) before first use. In order to avoid contamination, it should not be removed afterwards (silver nitrate solution is very reactive). The bottle should be stored upright with the other test set components according to specification.

Shelf-life

The Reticulin silver plating kit acc. to Gordon & Sweets - for the detection of reticular fibers in histological tissue specimens can be used until the stated expiry date.

After first opening of the bottle, the contents can be used up to the stated expiry date when stored at +2 °C to +8 °C.

The bottles must be kept tightly closed at all times.

Capacity

The package is sufficient for up to 110 applications.

Additional instructions

For professional use only.

In order to avoid errors, the application must be carried out by qualified personnel only.

National guidelines for work safety and quality assurance must be followed. Microscopes equipped according to the standard must be used.

Protection against infection

Effective measures must be taken to protect against infection in line with laboratory guidelines.

Instructions for disposal

The package and any unused control slides must be disposed of in accordance with the current disposal guidelines.

Used solutions and solutions that are past their shelf-life must be disposed of as special waste in accordance with local guidelines. Information on disposal can be obtained under the Quick Link "Hints for Disposal of Microscopy Products" at www.microscopy-products.com. Within the EU the currently applicable REGULATION (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 applies.

Auxiliary reagents

Cat. No. 100121	Nuclear fast red-aluminum sulfate solution 0.1 % for microscopy	500 ml
Cat. No. 100361	ISOSLIDE® Reticulin Control Slides with reference tissue for the detection of reticular fibers in histology	25 tests
Cat. No. 100579	DPX new non-aqueous mounting medium for microscopy	500 ml
Cat. No. 100974	Ethanol denatured with about 1 % methyl ethyl ketone for analysis EMSURE®	1 l, 2.5 l
Cat. No. 103699	Immersion oil Type N acc. to ISO 8036 for microscopy	100-ml dropping bottle
Cat. No. 104699	Immersion oil for microscopy	100-ml dropping bottle, 100 ml, 500 ml
Cat. No. 107961	Entellan® new rapid mounting medium for microscopy	100 ml, 500 ml, 1 l
Cat. No. 108298	Xylene (isomeric mixture) for histology	4 l
Cat. No. 109016	Neo-Mount® anhydrous mounting medium for microscopy	100-ml dropping bottle, 500 ml
Cat. No. 109843	Neo-Clear® (xylene substitute) for microscopy	5 l

Hazard classification

Cat. No. 1.00251.0001

Please observe the hazard classification printed on the label and the information given in the safety data sheet.

The safety data sheet is available on the website and on request.

CAUTION! Contains CMR substances. Please observe the corresponding safety instructions given in the safety data sheet.

Main product components

Cat. No. 1.00251.0001

Reagent 1	
KMnO ₄	5 g/l
Reagent 2	
H ₂ SO ₄	8 g/l
Reagent 3	
C ₂ H ₂ O ₄	10 g/l
Reagent 4	
(NH ₄)Fe(SO ₄) ₂ x 12 H ₂ O	25 g/l
Reagent 5	
AgNO ₃	10 g/l
NH ₃	16 g/l
NaOH	36 g/l
Reagent 6	
CH ₂ O	40 g/l
Reagent 7	
HAuCl ₄	0.8 g/l
Reagent 8	
Na ₂ S ₂ O ₃	0.1 mol/l

Other IVD products

Cat. No. 102472 ISOSLIDE® Warthin-Starry Control Slides 25 tests with reference tissue for the detection of Helicobacter pylori and Spirochetes in histological tissue

Cat. No. 102473 ISOSLIDE® Methenamine Control Slides 25 tests with reference tissue for the detection of argent-affine structures in histological tissue

General remark

If during the use of this device or as a result of its use, a serious incident has occurred, please report it to the manufacturer and/or its authorised representative and to your national authority.

Literature

1. Romeis - Mikroskopische Technik, Editors: Maria Mulisch, Ulrich Welsch, 2015, Springer Spektrum, 19. Auflage
2. Welsch Sobotta - Lehrbuch Histologie, Editor: Ulrich Welsch, 2006, ELSEVIER Urban&Fischer, 2. Auflage
3. Histotechnik, Gudrun Lang, 2013 Springer Verlag, 2. Auflage
4. Theory and Practice of Histological Techniques, John D Bancroft, Marilyn Gamble, 2008, Churchill Livingstone ELSEVIER, 6th Edition
5. Laboratory Manual of Histochemistry, Linda L. Vacca, 1985, Raven Press
6. Basiswissen Histologie und Zytologie, Karl Heinz Stein, Hellmut Flenker, 1998, uZv, 2. Auflage
7. Histological & Histochemical Methods: Theory & Practice, J. A. Kiernan, 1990, Pergamon Press, 2nd Edition
8. Histological and Histochemical Methods, Theory and practice, J. A. Kiernan, 2015, Scion Publishing Ltd, 5th Edition



Consult instructions for use



Manufacturer



Catalog number



Batch code



Caution, consult accompanying documents



Use by YYYY-MM-DD



Temperature limitation

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