2C-311

Haematoxylin solution, according to Gill III
In-vitro diagnostic agent

Description

The product 2C-284 is a ready-to-use solution for professional users for application in histology and cytology. It is a staining solution mixed with acetic acid.

The product comes in 1 pack size: 2C-311.01000 (1l bottle)

Main components

Haematoxylin (C.I. 75290)	8.0 g/l
Aluminium sulphate ($Al_2(SO_4)_3$ x 18 H_2O)	5.0g/l
Acetic acid ($C_2H_4O_2$)	27.0g/l

Purpose

Haematoxylin solution, according to Gill III is used for the examination of histological and cytological sample material such as histological sections. It is a ready-to-use dye solution for professional users. It can be used within haematoxylin-eosin (HE) staining for nuclear staining.

Sample material and sample preparation

Sampling may only be carried out by qualified personnel. All samples must be processed with state-of-the-art technology. All samples must be clearly labelled.

Sample material: Sections of human tissue (3–4 µm thickness) after fixation, for instance by means of buffered formol and fixation mixtures with ethanol and formalin and subsequent embedding in paraffin or frozen sections, as well as clinical material from cytology (urine sediment, sputum, smears from fine needle aspiration biopsies, irrigation fluids, imprints, effusions).

Test principle

HE staining uses the two dyes haematoxylin and eosin.

Haematoxylin is a plant dye and is extracted from blue wood. Oxidation turns haematoxylin into haematein, the actual dye, which, however, binds poorly to tissue components. Only the addition of metal ions ("pickling") enables its use as a staining agent. The resulting metal complexes are called haematein or haematoxylin lacquers. They are positively charged and bind to the negatively charged phosphate groups of the nucleic acids of the cell nucleus.

Eosin (tetrabromofluorescein) is a negatively charged acidic dye and binds to positively charged structures, such as plasma proteins. Acidification of the solution intensifies the staining. However, an excessively acidic environment can prevent differentiation after previous nuclear staining, which is why HE staining is carried out at a pH of 4 to 6.

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Staining

Histological sections must be deparaffinised before staining.

Transfer sections or smear specimens via a descending ethanol series into distilled water.

The ready-to-use staining solution should be filtered before use.

HE staining is carried out as a regressive staining, i.e. a longer staining ("overstaining") with haematoxylin is carried out first in order to differentiate with eosin solution after rinsing in hydrochloric acid solution (0.1%) and bluing in tap water. After being rinsed again in tap water, the samples are transferred to xylene via an ascending ethanol series.

The samples can be covered with a synthetic covering medium for subsequent examination under a microscope.

To ensure the differentiability of the target structures, suitable control specimens should be kept along with the staining.

The usual staining protocols known from literature must be used.

Staining may only be carried out by qualified personnel.

Result

Nuclei: blue/purple

Cytoplasm: pink-red

Erythrocytes: orange

Precautionary measures

When removing the product, care must be taken to avoid contamination of the storage vessel. Once the solution has been removed, it must not be returned to the canister. If turbidity or solids appear, discard the product. The product is intended for single use and must not be reused.

Storage and shelf life

Store the unopened containers in a dry place at 15 to 25 °C, avoiding direct sunlight.
The shelf life is 2 years. See also the best-before date (BBD) on the label. Once the containers have been opened, the shelf life corresponds to the best-before date, as long as the storage conditions are observed and the solution is handled properly.

Safety notice

If any serious incidents occur in connection with the product, please report them to the manufacturer and the national authority.

Literature

Romeis, Mikroskopische Technik, Editors: Maria Mulisch, Ulrich Welsch, 2010, Springer Spektrum, 18th edition

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