Van Gieson’s Solution

3925

Van Gieson Trichrome Staining

This staining method allows a differential visualisation of tissue structures in paraffin sections.

Van Gieson’s solution contains two dyes with very different properties: The fine-particle picric acid infiltrates quickly all structures of tissue by staining them yellow. The coarse-particle acid fuchsin can stain only the coarse structures of collagen connective tissue during the short residence time. There the picric acid is masked. Do not prolong the residence time to avoid the masking of picric acid in other tissue structures, too (principle of progressive staining).

After staining remove the picric acid as completely as possible from tissue stained with acid fuchsin tends to fade out when being exposed to acids and bases. The procedure demands some skill for you have to stop rinsing before the picric acid is also removed from the other tissue structures (in that case the tissue becomes reddish).

The nuclei are stained with Weigert’s iron hematoxylin solution. The solution is acid resistant and, therefore, resistant against picric acid.

Additional chemicals required:
- Ethanol denatured: 99.8 % (Art. No. K928), 96 % (T171), 70 % (T913)
- HCl-ethanol solution 3 % (Art. No. 6477) – working solution 0.5 %
- Usual Clearing Agents: Roti®-Histol (Art. No. 6640)
  Roticlear® (Art. No. A538)
  Xylene p.a. (Art. No. 4436)

  Roti®-Mount (Art. No. HP68), compatible with Roticlear®
  Roti®-Histokitt II (Art. No. T160), compatible with Xylene

Instruction*:

1. De-wax and rehydrate sections (descending alcohol series finishing off with ethanol 70 %).
2. Stain with iron hematoxylin solution acc. to Weigert (Mix solution A + B at a ratio of 1:1, solution stable for 8 days at room temp.).
3. Rinse with distilled water to avoid precipitation of hematein.
4. Examine by microscope: Nuclei should be grey blue, cytoplasm colorless to max. light grey. If the cytoplasm is stained too intensive differentiate in HCl-ethanol 0.5%. 2-3 sec
5. Rinse in tap water to interrupt the differentiation.
6. Blue in flowing tap water.
7. Stain with van Gieson’s solution. 1-3-min
8. Rinse shortly with ethanol 70% and ethanol 96%.
   Caution, picric acid is especially soluble in diluted ethanol!
9. Dehydrate and rinse with ethanol 96%, finish with 2 x ethanol 100%.
11. Mount with appropriate mounting medium.

Please note at step 9:
Rinse moderately with highly concentrated ethanol to remove the picric acid from the connective tissue (see also above).


Result:
- Cell nuclei: dark blue/dark brown
- Collagene fibres: red
- Cytoplasm: yellow
Elastica van Gieson Staining

Van Gieson trichrome staining is well combinable with elastica staining acc. to Weigert allowing a good overview of various tissue structures, especially a differentiated visualisation of connective tissue and elastic fibres.

**Additional chemicals required:**
- Ethanol denatured: 99.8 % (Art. No. K928), 96 % (T171), 70 % (T913)
- Resorcinol fuchsine solution according to Weigert (Art. No. X877)
- Usual Clearing Agents: Roti®-Histol (Art. No. 6640)
  Roticlear® (Art. No. A538)
  Xylene p.a. (Art. No. 4436)
  Roti®-Mount (Art. No. HP68), compatible with Roticlear®
  Roti®-Histokitt II (Art. No. T160), compatible with Xylene

**Instruction*:**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>De-wax and rehydrate sections (descending alcohol series finishing off with ethanol 80 %).</td>
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<tr>
<td>2.</td>
<td>Stain with resorcinol fuchsine solution. 20-30 min</td>
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<tr>
<td>3.</td>
<td>Rinse with tap water until stain fades.</td>
</tr>
<tr>
<td>4.</td>
<td>Rinse with distilled water.</td>
</tr>
<tr>
<td>5.</td>
<td>Differentiate with ethanol 80%.</td>
</tr>
<tr>
<td>6.</td>
<td>Rinse with distilled water to interrupt the differentiation.</td>
</tr>
<tr>
<td>8.</td>
<td>Stain with iron hematoxylin solution acc. to Weigert (Mix solution A + B at a ratio of 1:1, solution stable for 8 days at room temp.). 2-3 min</td>
</tr>
<tr>
<td>9.</td>
<td>Rinse with distilled water to avoid precipitation of hematein.</td>
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<tr>
<td>10.</td>
<td>Blue in flowing tap water. 10 min</td>
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<tr>
<td>11.</td>
<td>Stain with van Gieson’s solution. 1-3-min</td>
</tr>
<tr>
<td>12.</td>
<td>Rinse shortly with ethanol 70% and ethanol 96%.  <em>Caution, picric acid is especially soluble in diluted ethanol!</em></td>
</tr>
<tr>
<td>13.</td>
<td>Dehydrate and rinse with ethanol 96%, finish with 2 x ethanol 100%.</td>
</tr>
<tr>
<td>15.</td>
<td>Mount with appropriate mounting medium.</td>
</tr>
</tbody>
</table>

**Please note at step 13:**

Rinse moderately with highly concentrated ethanol to remove the picric acid from the connective tissue and, therefore, avoid fading of the staining. *Caution: If the rinsing is too intensive the tissue becomes reddish!*

**Result:**
- Elastic fibres: dark violet
- Cell nuclei: dark blue/dark brown
- Collagene fibres: red
- Muscle, cytoplasm: yellow

**Please note:**
The colour intensity depends on the pre-treatment and the composition of the samples to be stained. It may initially be necessary to adapt the method to the respective conditions.

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**EUH001 P404**

**Van Gieson’s solution**

<table>
<thead>
<tr>
<th>3925.1</th>
<th>500ml</th>
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<tbody>
<tr>
<td>3925.2</td>
<td>1l</td>
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</tbody>
</table>

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