Sudanese traditional stains for staining some biological samples

Hiba Siddig Ibrahim1* and Shamsoun Khamis Kafi2

Taifta, cloth dye and paints were considered as one of the Sudanese colours that was extracted from Sudanese rocks; it used to colour traditional handworks such as Palm Sunday (local name: saaf), prayers carpets while the second dye used to stain clothes in addition to the third one EMohandis paints (water base painting) that used for synthetic enamel and emulsion paints. All those dyes were used in this study to stain some bacteriological smears in addition to blood films to study the possibility of using these stains in the future to stain some medical samples in case of safe stain, ruler areas to avoid travels cost, good staining, availability of stain, and low cost too.

In this study, we have used different staining colours with the different procedures to study the possibility of staining of some biological samples with those traditional Sudanese dyes; beside ability to uses those stains in the future to stain other kind of biological samples such as histopathological samples, in cosmetics, medical tabs and also to colour food.

Key Words: Taifta, S. pyogens, K. pneumoniae, Coomassie blue.

METHODS

Preparation of bacteriological smear

Two chocolate agars plates that contained either S. pyogens or K. pneumoniae were brought into the incubator for madding two different kinds of smears from both organisms. Dust free slide were brought and passed three times under the benzene burner for sterilization, waiting to cool, a colony from zig zag area was taken by loop then added to slides that contains a drop of normal saline, mix, waiting to dry and fixed by passing through the flame three times for fixations.

Preparation of blood film

Venous blood from cubical vein was collected in EDTA tube after sterilizing the collection area with 70% alcohol; a blood drop was added in dust clean free slide, spreading by spreader at 45 angels, drying and fixation with absolute alcohol for few seconds or until alcohol evaporation.

Preparation of taifta

Two gram from taifta were measured by sensitive balance in clean sterilized containers followed by adding 100 ml of tape water, mix until all stains powered dissolved, now the stain was ready to use.

Preparation of paints

A little amount from paints paste (2 g) were added to clean sterile containers followed by adding 50 ml of tape water, mix then the stain was ready to be used.

Preparation of fabrics colour

A little amount from fabrics colour paste (2 g) were added to clean sterile containers followed by addition of water to complete the volume to 40 ml and mix, the stain was ready to use.

Taifta staining procedure

Eight slides were brought into the staining rack, 2ml from each Taifta were added to each slides, waiting 3 minutes, after that washed the slides with tape water and leave them to dried by air; the same procedure was applied with taifta mix after mixing equal volume from taifta staining solutions or taifta red was added first to slides, waiting 3 minutes for staining, after that washed the slide with tape water, then taifta blue was added for 2 minutes, washed by tape water and drying by air; while for Taftazain, taifta red was added to the slides first followed by heating until presence of steam, waiting for 3 minutes, washed with tape water, tafta blue were added for 2 minutes, washed by tape water and drying by air.

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Paints staining procedure
Three Slides were brought to the staining racks, 3 ml from Paints colour were added to each slides, waiting for 10 minutes, washed the film with tape water, drying by air.

For mixed paints coloured, the same procedure as above were applied after mixing equal amount from both red and green paints solutions.

Fabric colour staining procedure
Two slides were brought to the staining racks, 3 ml from Fabric colour were added to each slide and waiting for 10 minutes then washed the films with tape water, drying by air.

RESULTS
Traditional local Sudanese stains showed a good staining results within a different kind of biological samples and organisms, please review the Tables 1 and 2 for more details.

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Illustrate smears and blood films results with traditional stains</th>
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<tbody>
<tr>
<td>Types of stain</td>
<td>Total number of cocci smear</td>
</tr>
<tr>
<td>Taifta red</td>
<td>5</td>
</tr>
<tr>
<td>Taifta blue</td>
<td>5</td>
</tr>
<tr>
<td>Taifta brown</td>
<td>5</td>
</tr>
<tr>
<td>Taifta mix 1</td>
<td>5</td>
</tr>
<tr>
<td>Taifta zn2</td>
<td>5</td>
</tr>
<tr>
<td>Black dye</td>
<td>5</td>
</tr>
<tr>
<td>Red paints</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>Illustrate traditional stains quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of stain</td>
<td>Quality of stain for cocci</td>
</tr>
<tr>
<td>Taifta red</td>
<td>Good</td>
</tr>
<tr>
<td>Taifta blue</td>
<td>Good + little amount of deposit</td>
</tr>
<tr>
<td>Taifta brown</td>
<td>Good</td>
</tr>
<tr>
<td>Taifta mix</td>
<td>Good</td>
</tr>
<tr>
<td>Taifta-zn</td>
<td>Good</td>
</tr>
<tr>
<td>Black dye</td>
<td>Good + moderate amount of deposit</td>
</tr>
<tr>
<td>Red paints</td>
<td>Good</td>
</tr>
<tr>
<td>Green paints</td>
<td>-</td>
</tr>
<tr>
<td>Mix paints</td>
<td>-</td>
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<tr>
<td>Red fabrics colour</td>
<td>-</td>
</tr>
<tr>
<td>Blue fabrics colour</td>
<td>-</td>
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</tbody>
</table>

DISCUSSION AND CONCLUSION
Dying and staining procedure were considered the most important techniques in medical filed, industries, foods, decoration, cosmetics and artist, here I was concerned for the first one; the medical filed specially laboratories due to ability of dye for staining different kinds of cells, tissues and organisms; as I mentioned before the main aim of this study is to study the possibility of staining some biological samples by traditional Sudanese dye/stains; according to these, I found that, traditional Sudanese dye can be used to stain some biological samples with a good results except in some cases with gram negative bacteria it can gives a good stain or faint coloured sometimes; according culture old, ability of bacteria to change the PH in the medium, or may be due to absence of buffer that can fix the PH of staining solution nor the staining, times was too short and needs to be prolonged with gram-negative bacilli another things are that; absence of substances that can enhance taken up of stain by organism or may be due to absence of paints showed neither good nor bad blood film staining technique that is
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may be due to thickness of blood films or its unsuitable to staining biological samples, now I tried to use tafita with malaria parasite but it needs more times to cover all malaria parasite stages.

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STATEMENT OF COMPETING INTERESTS
The authors declare that they have no competing interests.

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