ABSTRACT
A buffer solution has the function of resisting changes in pH even when adding powerful acids or bases. However, in the physiological environment the buffered system also provides cofactors for enzymatic reactions, critical salts and even essential nutrients for cells and tissues. Therefore, when trying to reproduce biological conditions in vitro, we must make the appropriate choice of the buffer. After all, it will provide the appropriate medium in which reactions will occur.

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dx.doi.org/10.17504/protocols.io.bfyjjpun

COLLECTIONS
Buffers for Use in Biological Systems

KEYWORDS
pH, Henderson-Hasselback, Biochemistry, Molecular Biology

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MATERIALS TEXT
- Deionized Water
- pH Meter (sensitive)
- Glycine
- Sodium Hydroxide

SAFETY WARNINGS
Wear personal protective equipment: gloves, lab coat and mask.

BEFORE STARTING
Organize your workspace.

Make sure all solutions and equipment are available.

Glycine-Sodium Hydroxide Buffer

1

<table>
<thead>
<tr>
<th>pH: pH8.6 to pH10.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) 0.1 M Glycine; 7.5 g L⁻¹ (M.W.: 75.0 g mol⁻¹)</td>
</tr>
<tr>
<td>(b) 0.1 M Sodium hydroxide; 4.0 g L⁻¹ (M.W.: 40.0 g mol⁻¹)</td>
</tr>
</tbody>
</table>

Mix 50 mL glycine and indicated volume of sodium hydroxide solutions.

<table>
<thead>
<tr>
<th>mL of Sodium hydroxide</th>
<th>4.0</th>
<th>8.8</th>
<th>16.8</th>
<th>27.2</th>
<th>32.0</th>
<th>38.6</th>
<th>45.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>8.6</td>
<td>9.0</td>
<td>9.4</td>
<td>9.8</td>
<td>10.0</td>
<td>10.4</td>
<td>10.6</td>
</tr>
</tbody>
</table>

2 Adjust the final volume to 200 mL with deionized water.

3 Adjust the final pH using a sensitive pH meter.