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.

DOI
dx.doi.org/10.17504/protocols.io.bfyhjpt6

COLLECTIONS
 Buffers for Use in Biological Systems

KEYWORDS
pH, Henderson-Hasselback, Biochemistry, Molecular Biology

LICENSE
This is an open access protocol distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.
MATERIALS TEXT
- Deionized Water
- pH Meter (sensitive)
- Tris(hydroxymethyl)aminomethane
- Hydrochloric Acid

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

BEFORE STARTING
Organize your workspace.

Make sure all solutions and equipment are available.

### Tris-HCl Buffer

1. Mix 50 mL Tris(hydroxymethyl)aminomethane and indicated volume of hydrochloric acid.

<table>
<thead>
<tr>
<th>mL of HCl</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>44.2</td>
<td>7.2</td>
</tr>
<tr>
<td>41.4</td>
<td>7.4</td>
</tr>
<tr>
<td>38.4</td>
<td>7.6</td>
</tr>
<tr>
<td>32.5</td>
<td>7.8</td>
</tr>
<tr>
<td>21.9</td>
<td>8.2</td>
</tr>
<tr>
<td>12.2</td>
<td>8.6</td>
</tr>
<tr>
<td>12.2</td>
<td>9.0</td>
</tr>
</tbody>
</table>

(a) 0.1 M Tris(hydroxymethyl)aminomethane; 12.1 g L\(^{-1}\) (M.W.: 121.0 g mol\(^{-1}\))
(b) 0.1 M Hydrochloric acid

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

3. Adjust the final pH using a sensitive pH meter.

---

Citation: Neilier Junior (06/03/2020). Tris-HCl Buffer. https://dx.doi.org/10.17504/protocols.io.bfyhjpt6

This is an open access protocol distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.