In vitro permeation of gel formulations containing local anesthetics associated with poly-ε-caprolactone nanocapsules across pig oral mucosa.

Stephany di Carla Santos (IC), Bruno V. Muniz (PG), Luciano Serpe (PG), Michelle Franz-Montan (PQ).

Abstract

The ideal topical anesthetic in Dentistry is not yet available. Thus, the objective of the present study was to evaluate in vitro the performance of different gel formulations containing 2.5% lidocaine and 2.5% prilocaine associated or not with poly-ε-caprolactone nanocapsules to cross pig buccal epithelium as a good indicative of efficient topical anesthesia in vivo. Permeation study was conducted in Franz type vertical diffusion cells during 5 h. In general, all the formulations tested presented good permeation and are good candidates for in vivo evaluation.

Key words: Oral mucosa, Topical anesthesia, Topical anesthetics, Dentistry.

<table>
<thead>
<tr>
<th>LA</th>
<th>Formulation</th>
<th>Jss</th>
<th>Lag time</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANLP</td>
<td>238.50±18.03a</td>
<td>4.71±0.70a</td>
<td></td>
</tr>
<tr>
<td>ALP</td>
<td>236.45±32.16a</td>
<td>3.29±1.18a</td>
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<tr>
<td>LDC</td>
<td>160.88±31.20b</td>
<td>1.82±0.35a</td>
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</tr>
<tr>
<td>CLP</td>
<td>248.03±14.60a</td>
<td>3.79±1.94a</td>
<td></td>
</tr>
<tr>
<td>EMLA</td>
<td>280.32±44.43a</td>
<td>13.23±4.90a</td>
<td></td>
</tr>
<tr>
<td>ANLP</td>
<td>211.09±25.91c</td>
<td>6.26±0.63c</td>
<td></td>
</tr>
<tr>
<td>ALP</td>
<td>223.89±27.37c</td>
<td>3.40±0.95cd</td>
<td></td>
</tr>
<tr>
<td>PLC</td>
<td>172.24±20.99c</td>
<td>2.10±0.54d</td>
<td></td>
</tr>
<tr>
<td>CLP</td>
<td>168.14±20.40c</td>
<td>3.94±1.61cd</td>
<td></td>
</tr>
<tr>
<td>EMLA</td>
<td>283.27±43.46c</td>
<td>4.68±2.98cd</td>
<td></td>
</tr>
</tbody>
</table>

ANOVA/Tukey-Kramer. Different letters indicate statistically significant difference among the formulations into the permeation parameter for each LA (p<0.05). Each permeation parameter was analyzed separately.

Conclusions

In general, all formulations tested presented good permeation and are good candidates for in vivo evaluation.

Acknowledgement

Financial support was provided by the São Paulo Research Foundation (FAPESP, grant 2012/06974-4). Stephany di Carla Santos acknowledges the scholarship provided by CNPq.