THE EXPRESSION OF TYPE 1 COLLAGEN ON WOUND HEALING OF DENTAL EXTRACTION USING CHITOSAN GEL WITH DIFFERENT VISCOSITY (RESEARCH ARTICLE)

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ABSTRACT

Purpose. Type 1 collagen is significant constituent of natural extracellular matrix that important in wound healing process of dental extraction. The viscosity of chitosan gel could influence the performance on many application. The aim of this study was to account expression of type 1 collagen on wound healing process of dental extraction in Rattus norvegicus, for 7.14 and 21days using chitosan gel with high and low viscosity. Materials and methods. Rattus norvegicus strain wistar male, aged 8-16 weeks, divided into 3 groups, namely group 1 which given chitosan gel with high viscosity, group II which given chitosan gel with low viscosity and group III as control which were not given chitosan gel. Chitosan gel were applied into the socket of dental extraction. Rat was decapitated 7.14 and 21 days after chitosan gel application and the jaw in the treated regions and control group were cut for immunohistochemical examination using type 1 collagen monoclonal antibody to observe collagen type I. Data were analyzed using ANOVA test. Results. The result showed significant differences in type 1 collagen for 7.14 and 21 days observation (p<0.05). The expression of type 1 collagen were found higher in the group which given chitosan gel with high viscosity. Conclusion. Chitosan gel with high viscosity have a good mucoadhesive properties that can stimulate the expression of type 1 collagen on wound healing process of dental extraction.

Key words: Chitosan gel, type I collagen, viscosity.

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BACKGROUND AND METHODE

**FIGURE 1.** The figure of type 1 collagen on 7.14 and 21 days using chitosan with different viscosity and control group

**TABLE 1.** The mean and standard deviation of each group at 7.14 and 21 days

<table>
<thead>
<tr>
<th>Variable</th>
<th>Treatment</th>
<th>7 days</th>
<th>14 days</th>
<th>21 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>10.61±0.49</td>
<td>10.52±0.36</td>
<td>12.38±0.75</td>
<td></td>
</tr>
<tr>
<td>Type 1 Collagen</td>
<td>18.56±1.12</td>
<td>18.57±1.58</td>
<td>18.14±2.19</td>
<td></td>
</tr>
<tr>
<td>Chitosan, low viscosity</td>
<td>21.42±1.36</td>
<td>15.56±1.72</td>
<td>12.58±1.63</td>
<td></td>
</tr>
</tbody>
</table>

REFERENCE:


CONCLUSION

Chitosan gel with high viscosity have a good mucoadhesive properties that can stimulate the expression of type 1 collagen on wound healing process of dental extraction.