Fluoride Bioavailability in Saliva after Using DENTTABS® Compared to Dentifrice.


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Aim

- To compare the level of fluoride retained in saliva after a single use of novel fluoride DENTTABS® containing NaF compared to commercial toothpaste containing amine fluoride.
Methods

• Four subjects: 3 fast saliva secretors, 1 slow secretor participated in this crossover study.

  - 4350 ppm fluoride from NaF in 0.33 g tablet (Prodentum GmbH, Berlin)
  - 1400 ppm fluoride from amine fluoride in 1.00 g dentifrice (GABA GmbH, Lörrach)
Methods

• After baseline saliva sample collection, the calibrated subjects brushed the teeth with the assigned product for 3 min.

• Saliva samples were taken at
  T1 - immediately after brushing
  T2 - 10 min.
  T3 - 25 min.
  T4 - 85 min. post-brushing

Each collection time of whole saliva for 10 min.
Methods

• Amount of collected saliva was measured

• Fluoride content was analysed using the fluoride sensitive electrode Orion 96-09
Methods

- All 4 subjects repeated all study cycles 5 times, and 3 cycles per subject underwent statistical analysis using Mann-Whitney-U test and Spearman correlation.
Results

- The fluoride retention was significantly higher after brushing with DENTTABS® at T1
Results

- The fluoride retention was significantly higher after brushing with DENTTABS® at T2
Results

• The decrease of fluoride retention after 25 min. (T3 and T4) did not significantly differ between both groups
## Results

- Correlation of flow rate of saliva in g/min. to fluoride retention:

<table>
<thead>
<tr>
<th>Retention time</th>
<th>Test substance</th>
<th>Min flow rate g/min</th>
<th>ppm</th>
<th>Max flow rate g/min</th>
<th>ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1 immediately</td>
<td>DENTTABS&lt;sup&gt;®&lt;/sup&gt;elmex&lt;sup&gt;®&lt;/sup&gt;</td>
<td>1.40 1.10</td>
<td>267.00 202.00</td>
<td>3.63 3.80</td>
<td>73.00 70.00</td>
</tr>
<tr>
<td>T2 10 min.</td>
<td>DENTTABS&lt;sup&gt;®&lt;/sup&gt;elmex&lt;sup&gt;®&lt;/sup&gt;</td>
<td>0.32 0.41</td>
<td>27.50 30.30</td>
<td>1.13 0.96</td>
<td>2.70 15.70</td>
</tr>
<tr>
<td>T3 25 min.</td>
<td>DENTTABS&lt;sup&gt;®&lt;/sup&gt;elmex&lt;sup&gt;®&lt;/sup&gt;</td>
<td>0.21 0.33</td>
<td>1.20 2.10</td>
<td>1.20 0.92</td>
<td>0.06 0.50</td>
</tr>
<tr>
<td>T4 85 min.</td>
<td>DENTTABS&lt;sup&gt;®&lt;/sup&gt;elmex&lt;sup&gt;®&lt;/sup&gt;</td>
<td>0.17 0.16</td>
<td>0.10 1.60</td>
<td>1.05 1.08</td>
<td>0.04 0.08</td>
</tr>
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- There was a strong correlation of individual salivary flow rate to the F- content.
Results

- Correlation of flow rate of saliva in g/min. to fluoride retention:

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- The reduced flow rate of saliva increases F – bioavailability by a factor of ca. 3 times.
Conclusions

• The saliva fluoride clearance kinetics of two equal amounts F-containing oral hygiene products demonstrate higher retention for DENTTABS® rapidly decreasing to baseline levels within the first 85 minutes.

• Therefore, the fluoride bioavailability is depending from the product formulation as well as from the individual pattern of salivary secretion.
THANK YOU FOR YOUR ATTENTION!