Dental Erosion is the loss of tooth substance by a chemical process that does not involve bacteria.

Extrinsic Causes: Diet and medications (Vitamin C, asthma, aspirin)
* Citrus fruits, fruit juices and candies with high concentration of citric acid.
* Herbal teas & Sour candies
* Carbonated beverages—soft/sports drinks (citric and phosphoric acid)
* Vinegar (acetic acid) associated with pickled foods

Intrinsic Causes: Reflux or Vomiting

The Signs of Tooth Erosion
* Sensitivity occurs when tooth enamel wears away. You may feel a twinge of pain when consuming hot, cold, or sweet foods and drinks.
* Discoloration is visible as a slight yellow appearance on the tooth surface.
* Transparency of the front teeth appears along the biting edges.
* Rounding of teeth occurs along the surfaces and edges of teeth.
* Cracks and roughness appear along the edges of the teeth.
* Dents (known as cupping) develop on the chewing surfaces of the teeth. At this severe stage, fillings may actually appear to rise up.
* Tooth decay is caused by loss of the protective outermost layer of enamel.

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**Dietary acids with potential to cause dental erosion**

- Acetic acid
- Ascorbic acid
- Benzoic acid (used as preservative)
- Citric acid
- Lactic acid
- Maleic acid
- Malic acid
- Phosphoric acid
- Propionic acid (used as preservative)
- Succinic acid
- Tartaric acid
- Carbonic acid

*adapted from Milosevic 2004

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**Preventative Measures to Reduce Erosion Risk from Acidic Foods**

- Diminish frequency of consumption of acidic foods and beverages
- Restrict acidic foods to main meals
- Rinse with water after acidic consumption
- Chew sugar-free gum to stimulate salivary flow
- Use only a soft toothbrush
- Use low-abrasive fluoride and bicarbonate-containing toothpaste
- Avoid toothbrushing immediately following an acid challenge
- Rinse with a low-concentration, non-acidulated fluoride mouthwash two times daily
- Apply pH neutral, highly concentrated fluoride gel of toothpaste two times weekly
- Fluoride varnish to be professionally applied two to four times per year
- Regular dental visits for ongoing assessments

*adapted from Imfeld 1996 and Gandara

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**pH and titratable acidity (TA) of various foods and drinks**

<table>
<thead>
<tr>
<th>Foods</th>
<th>Titratable acidity (g/100g)</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seedless raisins</td>
<td>2.59</td>
<td>3.98</td>
</tr>
<tr>
<td>Dried apricots</td>
<td>2.49</td>
<td>3.87</td>
</tr>
<tr>
<td>Orange squash 50% fruit</td>
<td>2.27</td>
<td>2.82</td>
</tr>
<tr>
<td>Pure orange juice concentrate</td>
<td>1.27</td>
<td>3.66</td>
</tr>
<tr>
<td>Organic bio yogurt concentrate</td>
<td>1.21</td>
<td>4.10</td>
</tr>
<tr>
<td>Pure apple juice concentrate</td>
<td>0.58</td>
<td>3.58</td>
</tr>
<tr>
<td>Natural cheese</td>
<td>0.50</td>
<td>5.01</td>
</tr>
<tr>
<td>Bananas</td>
<td>0.44</td>
<td>5.15</td>
</tr>
<tr>
<td>Apples</td>
<td>0.17</td>
<td>5.47</td>
</tr>
<tr>
<td>Pears</td>
<td>0.12</td>
<td>5.72</td>
</tr>
<tr>
<td>Strawberry flavored milk</td>
<td>0.12</td>
<td>6.41</td>
</tr>
<tr>
<td>Whole milk</td>
<td>0.10</td>
<td>6.69</td>
</tr>
<tr>
<td>Water</td>
<td>0.02</td>
<td>7.28</td>
</tr>
</tbody>
</table>

---

**Acidity, titratable acidity and erosive potential of some drinks**

<table>
<thead>
<tr>
<th>Drinks</th>
<th>pH</th>
<th>Titratable acidity</th>
<th>Erosion potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cola Drinks</td>
<td>2.5</td>
<td>0.7</td>
<td>Medium</td>
</tr>
<tr>
<td>Carbonated Orange</td>
<td>2.9</td>
<td>2.0</td>
<td>Medium</td>
</tr>
<tr>
<td>Grapefruit Juice</td>
<td>3.2</td>
<td>9.3</td>
<td>High</td>
</tr>
<tr>
<td>Apple Juice</td>
<td>3.2</td>
<td>4.5</td>
<td>High</td>
</tr>
<tr>
<td>Orange Juice</td>
<td>3.8</td>
<td>4.5</td>
<td>High</td>
</tr>
<tr>
<td>Sparkling Water</td>
<td>5.3</td>
<td>0.1</td>
<td>Low</td>
</tr>
</tbody>
</table>
Acid Erosion Wheels

- pH 7.0: Milk
- pH 4.1: Strawberry yoghurt
- pH 2.6: Cola

pH Scale:
- pH1: Very acidic
- pH2
- pH3: Moderately acidic
- pH4
- pH5
- pH6
- pH7: Neutral