



HOW DOES OXIDATIVE TOOTH WHITENING WORK?



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For ALL forms of whitening

Concentration + Contact Time = Results

All forms continue to work until your teeth reach saturation point where they will not whiten further



MOST COMMON AND STUDIED VITAL BLEACHING

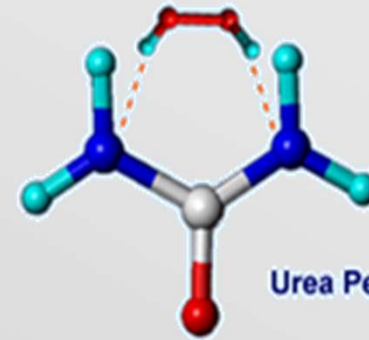
ACTIVE INGREDIENTS

- Hydrogen Peroxide [HP] (H_2O_2)
- Carbamide Peroxide [CP] ($\text{CH}_6\text{N}_2\text{O}_3$)
 - Dissociates into H_2O_2 and urea $\text{CH}_4\text{N}_2\text{O}$ in presence of water source (saliva)

Conversion is: $\text{HP}\% = \text{CP}\% / 3$

Example: $\frac{10\% \text{ CP}}{3} = 3\% \text{ H}_2\text{O}_2$

Hydrogen Peroxide



Urea Peroxide

Carbamide peroxide



HOW DOES OXIDATIVE TOOTH WHITENING WORK?

All whitening results are directly tied to:

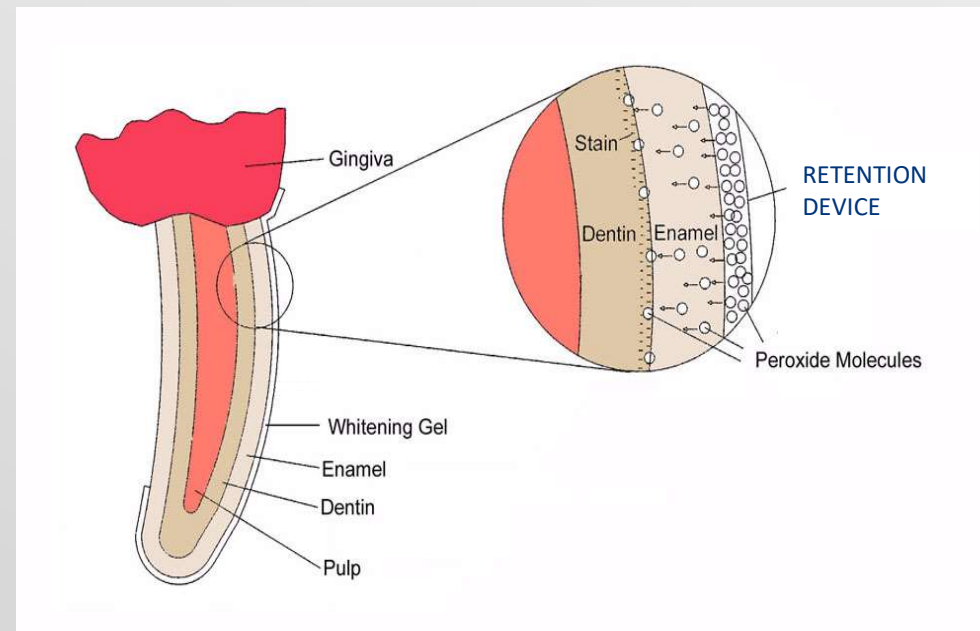
Concentration

- diffusion of peroxide to the stains below the surface.
- The higher the concentration, the faster the whitening

Contact Time

The amount of time the H_2O_2 is in contact with tooth surface

- Increasing contact time will increase results
- Patients will begin to see a result in 3 or 4 days but increase the days used & you will increase the results





HOW DOES OXIDATIVE TOOTH WHITENING WORK?

- Common organic compounds in teeth that produce yellowish color include porphyrins.
- Porphyrins are a class of natural biological chelators that chelate ions, like iron, in our body to control their levels.
- Iron is also a catalyst for peroxide reactions.
- Because porphyrin is often associated with iron, the stains often have a catalyst with them that helps enable the peroxide bleaching process.
- When peroxide encounters a stain such a porphyrin, it takes electrons from the molecules in a process called oxidation.
- When an electron is removed from a molecule, most often it changes its ability to filter light, rendering it colorless. For this process to occur the peroxide must be right next to the stain.

