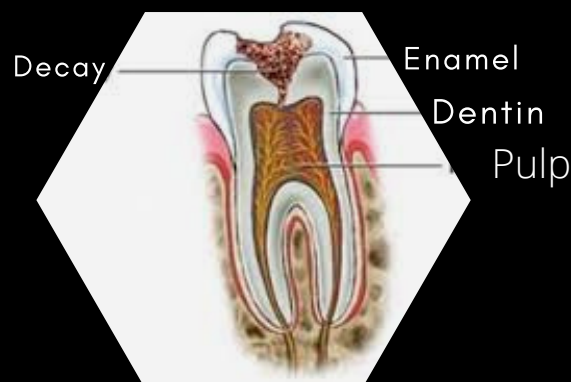
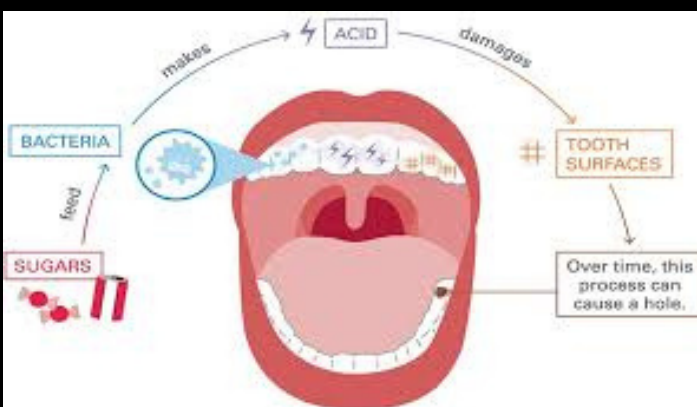


The anatomical components of teeth

- A tooth's outermost layer that covers the crown portion is made up of enamel. It is made up of mainly Hydroxyapatite and does not regenerate.
- The second layer is Dentin which has the ability to regenerate at a microscopic level but cannot heal fast enough to compensate for the decay caused by bacterial byproduct/acid. It also protects the pulp.
- The innermost layer is the tooth is the pulp which keeps it vital. It contains blood vessels and nerves.

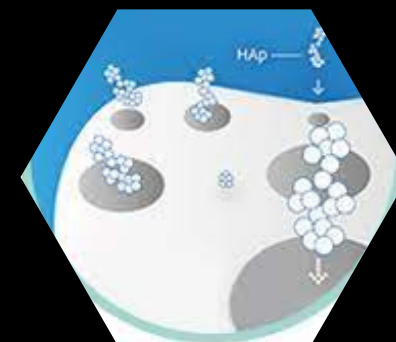


How decay breaks down teeth



What is nano hydroxyapatite ?

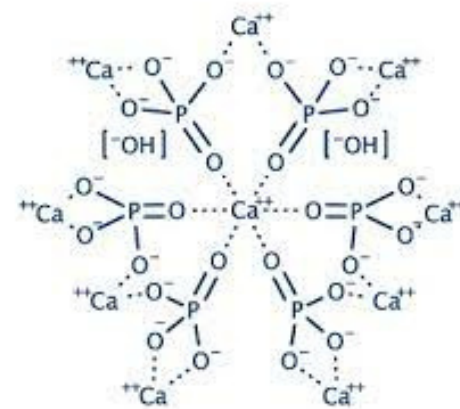
- Our bodies bones and tooth enamel are made up of a mineral called Hydroxyapatite
- It is composed of 39.68% by weight calcium and 18% by weight phosphorus
- In fact, 90% of our tooth enamel is made up of it. However, nano hydroxyapatite is synthesized to be able to replenish lost enamel minerals and promote new bone growth and development.



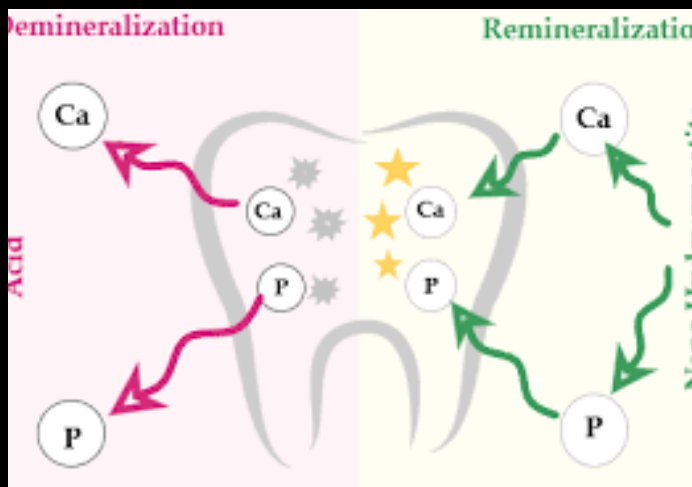
NANO HYDROXYAPATITE $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$

Qualities of Nano HA

- Biomimetic characteristics
- Penetrates into deeper layer than fluoride making teeth more resistant to acid

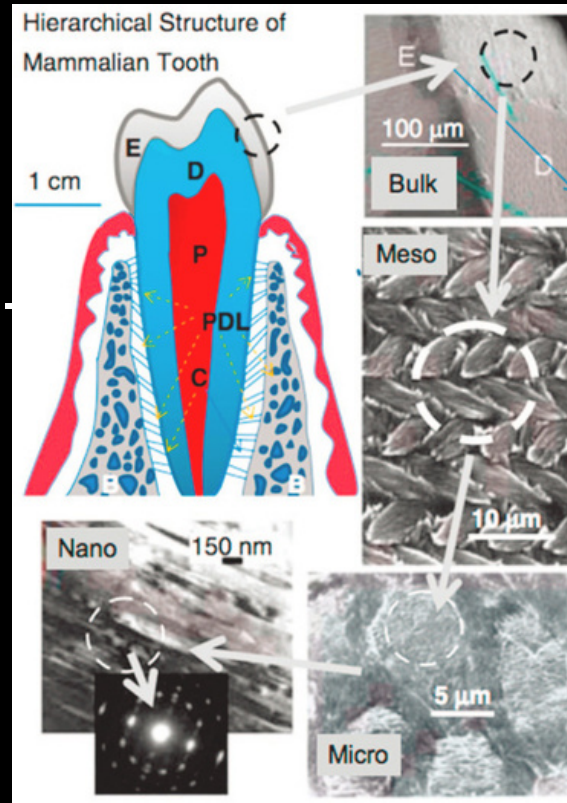


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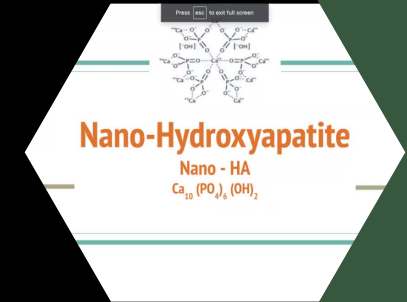


Demineralization & Remineralization of tooth structure

- **Demineralization occurs when enamel and dentine hydroxyapatite is broken down lose their Calcium and Phosphate.**
- **If the HA is partially demineralised, then this process is reversible if exposed to favourable oral environments.**
- **This process is called remineralisation, where lost mineral ions in the HA crystals are restored.**



- **New Technological advances like Nano Hydroxyapatite are now used for medical and dental advances like orthopedic and dental implants.**



References

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