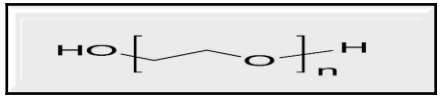
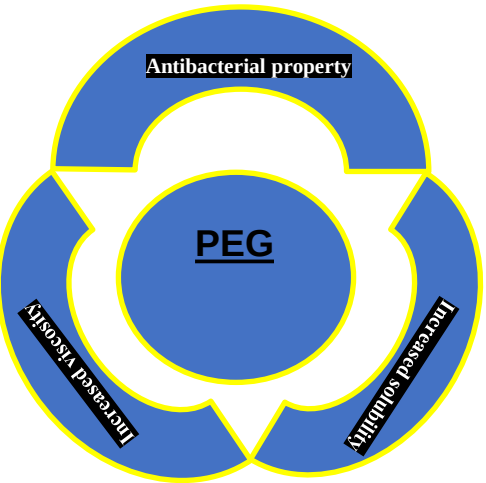
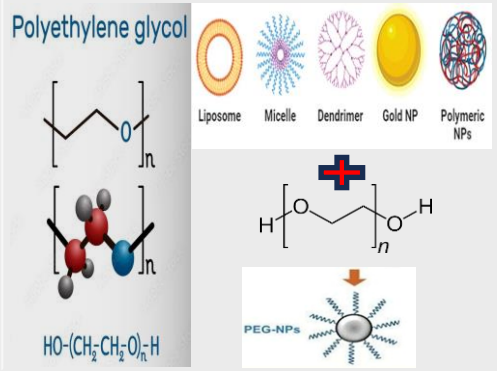
UNMASKING THE UNKNOWN ENEMY: THE ROLE OF POLYETHYLENE GLYCOL (PEG)

Introduction: Polyethylene glycol (PEG) is commonly used in dental materials due to its hydrophilic nature and molecular weight range (200–50,000 g/mol). PEGylation, the process of conjugating PEG with therapeutic agents, enhances antibacterial properties, solubility, stability, and viscosity.

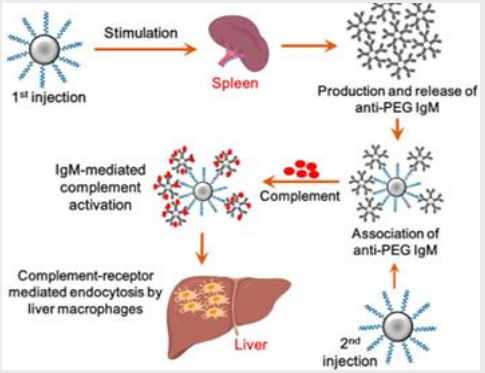




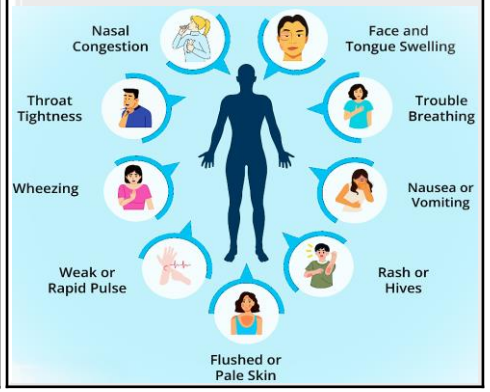
PEGYLATION



ANAPHYLAXIS



SIGNS AND SYMPTOMS



PREVENTIVE MEASURES

Advantages:

1. Enhanced viscosity
2. Increased Antibacterial property.
3. Increases lipid solubility.
4. Inhibits phagocytosis.
5. Increased bioavailability.

PEG- INTEGRATED IN

ANAPHYLACTIC SHOCK

EMERGING ALTERNATIVES

Conclusion: Despite its benefits, PEG can oxidize under stress, producing toxic metabolites like glycolic acid and hydroxy acids. Around 70–80% of the population has antibodies against PEG, potentially triggering anaphylactic reactions. Few of the emerging alternatives of PEG are polybetaines, polyacrylamide which are yet to researched.