

* Role of protein glycation in protein-protein crosslinking

→ Amine group in protein & nucleotides exposed to reducing sugar like glucose

↓
Form adduct by process-glycation

→ Steps :- Formation of schiff base between aldehyde or ketone group of sugar & amine

↓ over time

Series of rearrangement

↓ produce

Amadori product

↓
contain conjugated carbon-carbon double bond that can react with amino group on neighbouring protein.

↓
formation of covalent cross link between two protein or other biologic macromolecules.

↓
Can glycate further, extending network of cross link to include other macromolecules.

↓

these cross linked aggregate are called
AGEs - advanced glycation end product.

→ Effect of protein glycation:

• pronounced when long lived protein such as collagen or β -crystallins are affected.



their persistence enhance opportunity for multiple glycation & subsequent cross-linking events to occur.

- In vascular endothelial cell



Accumulation of cross-links in collagen network can lead to progressive loss of elasticity & thickening of basement membrane of blood vessel.



potentiate plaque formation



Increase workload for heart.

→ In eye :- compromise opacity of lens



manifest as cataract.

→ Diabetic patients are susceptible to formation of AGEs.

→ glycation of hemoglobin & S. albumin are used as biomarkers for diagnosis of diabetes.