Eco-Friendly and Innovative Polymer Topic: The Dyeing Levelness for Buffed Leather by Using Amphoteric Polymer Agent

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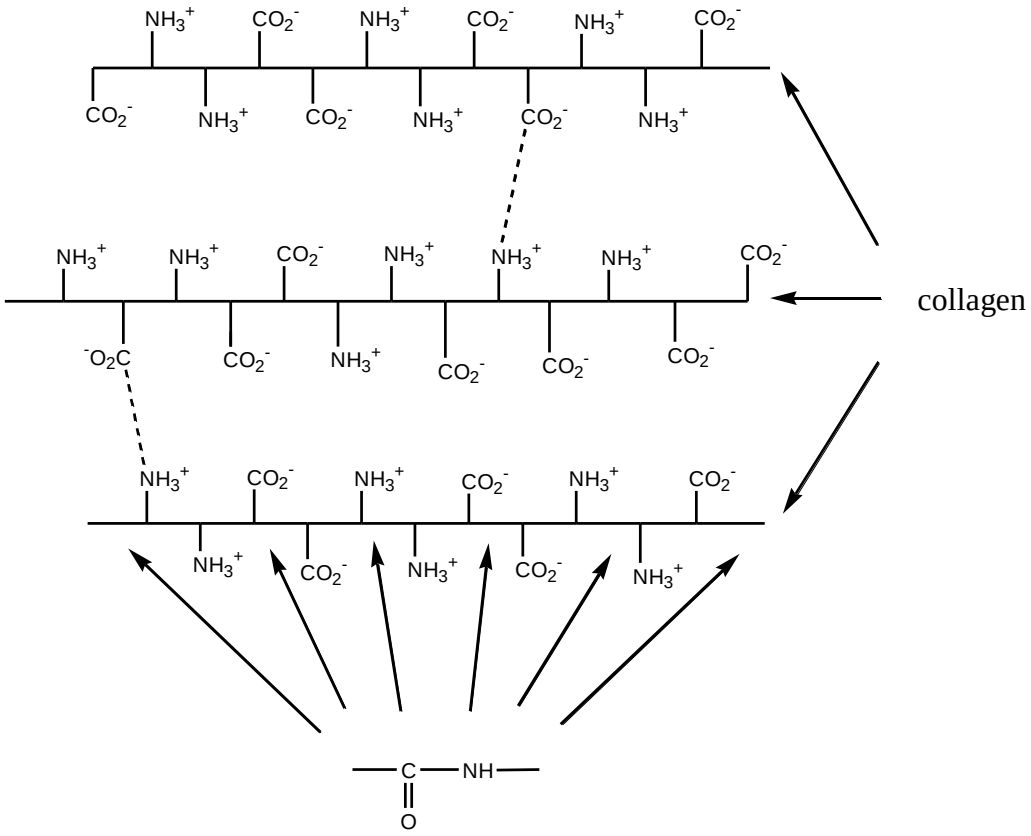
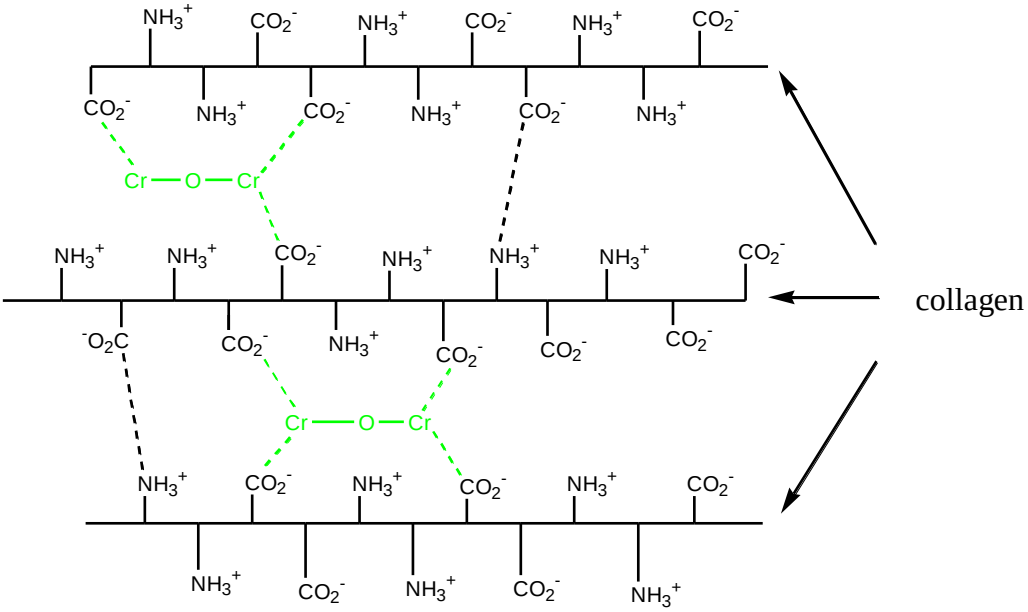
1、Collagen Molecule Diagram：

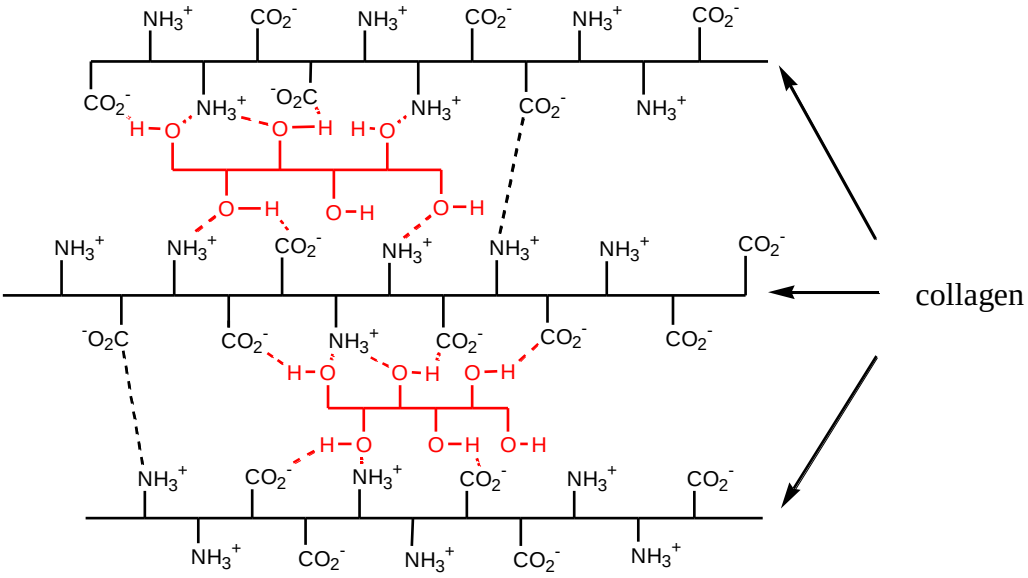


2、Principle of Leather Tanning

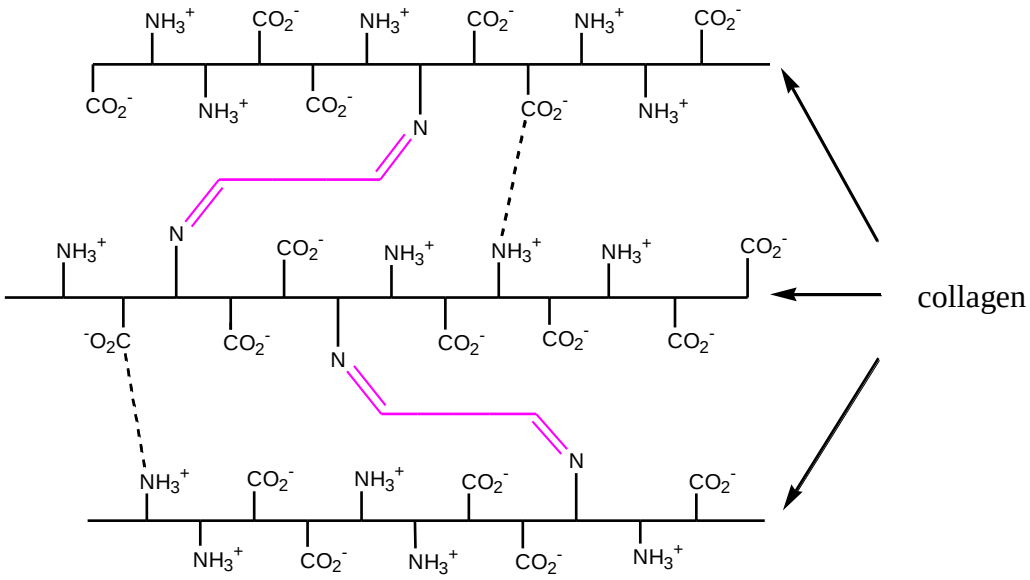
2.1 Chrome Tanning：Major role is to create a bridge between the Carboxyl group of the collagen molecules



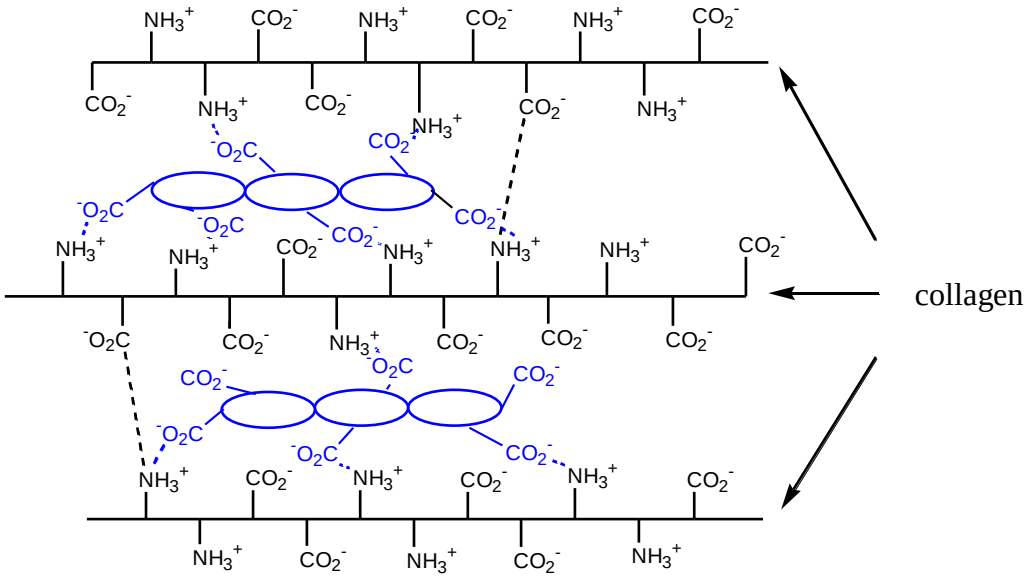
2.2 Vegetable Tanning：In vegetable tannings, polyphenol group are present and it forms a hydrogen bond with Carboxyl and amino group of the collegen molecule.



2.3 Aldehyde Tanning：Aldehyde groups can combine with the amino group of the collagen molecules to form Enamine bond.

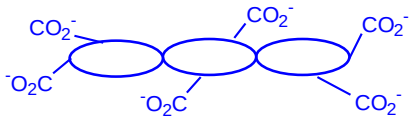


2.4 Synthetic Resin Tanning：The Acrylic Resin Molecule contains many carboxyl group, and it forms a large number of ionic bond with the amino group on the collagen molecules.

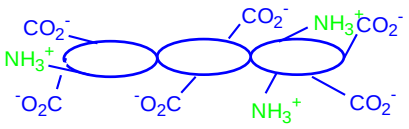


3、Dyeing Leather and the occurrence of Bleaching in Vegetable Tannins

3.1.1 Usually acrylic tannin molecular structure contains a lot of anionic carboxyl group

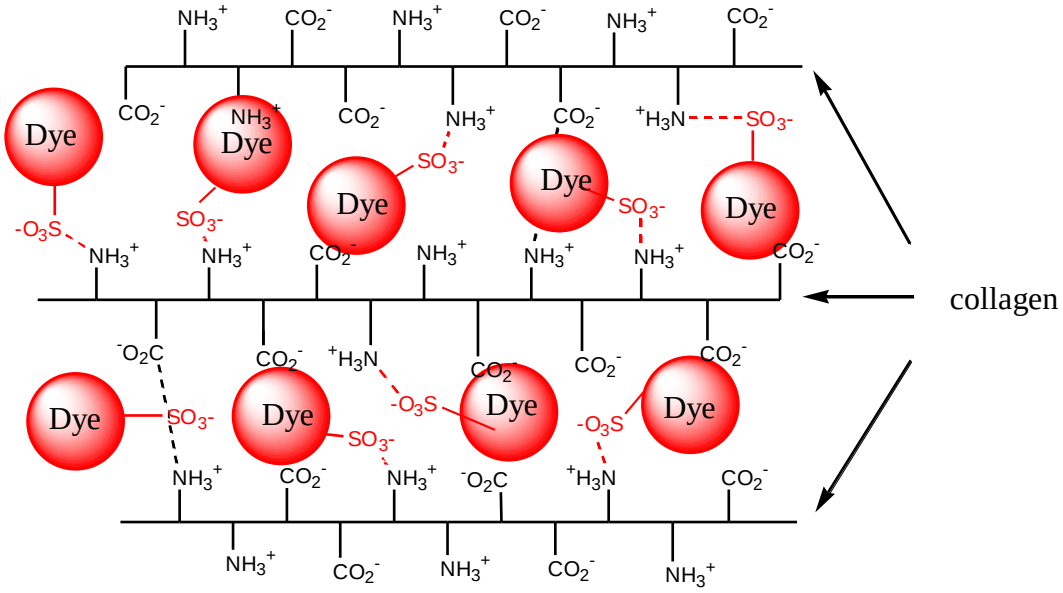


3.1.2 Molecular structure in DDP: DDP resin increases the traditional acrylic molecular structure of a cationic amino group (amine)

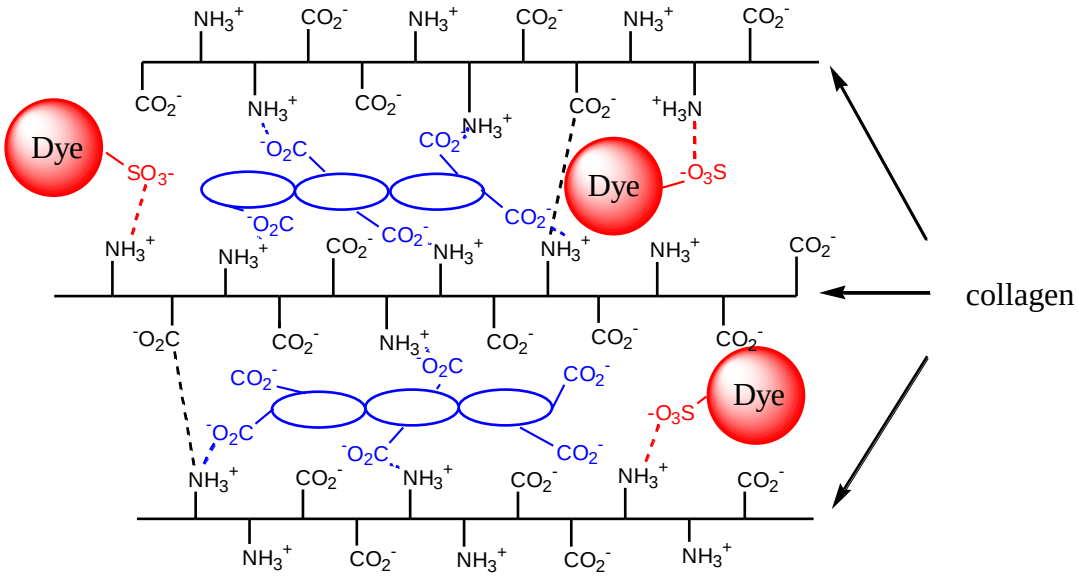


3.2 Dye molecules combines with leather collagen molecules

3.2.1 A schematic diagram of leather collagen molecules merging with dye molecules without any resin tanning.



3.2.2 In the schematic diagram of the combination of acrylic resin tanning leather collagen molecule and the dye molecules: The upper portion of the amine groups in the acrylic resin tanned collagen molecule forming an ionic bond with the the acrylic molecules of CARBOXYL group, this result in lower chances of anionic dye molecules to combine with collagen molecules hence causes the bleaching.



3.2.3 Schematic diagram of the combination of DDP resin and dye molecules with the collagen molecules of leather: DDP molecules can replace the collagen molecules to combine with anionic molecules, increasing the probability of dyeing.