

Interaction of type I fibrillar collagen with some low molecular weight compounds

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Abstract Anionic surfactants increases significantly viscosity of type I fibrillar collagen gels in acid medium at low surfactant/collagen ratios. Dependence of viscosity at zero shearing rate on pH and collagen/surfactant ratio suggests that interaction is due to the electrostatic binding of surfactant anions on positively charged collagen and hydrophobic interaction of hydrocarbon tails of anchored amphiphile anions. Rheological behaviour of systems containing cationic and nonionic surfactants supports the mechanism: cationic surfactants interact only in acid medium, while nonionic ones do not interact. These confirm the primordial role of electrostatic forces in interaction and the secondary one of hydrogen bonds. Influence of additives that affect such interactions (potassium chloride, ethyl alcohol, hydrogen breaker salts for water: potassium bromide, iodide, chlorate, and thiocyanate), and temperature on viscosity of collagen and collagen/sodium dodecyl sulphate gels confirms the above mechanism.

Keywords: protein-surfactant interaction, type I fibrillar collagen, rheological behaviour
