

Graph referenced as "Light scattering. Particle scattering functions for bovine submaxillary mucin"

Contributors

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which already could be regarded as a very stiff coil. However, on the assumption of rod shapes for the mucin in all three solutions, the length of the rod can be calculated. These are given in Table I. As was expected, this length decreased with an increase in ionic strength because the charges on the polyelectrolyte exert a repulsive force on the neighboring charge and this repulsion tends to stretch out the molecule. With increasing ionic strength, the degree of ionization of the polyelectrolyte decreases which results in less repulsion, hence a diminished stiffness in the rod.

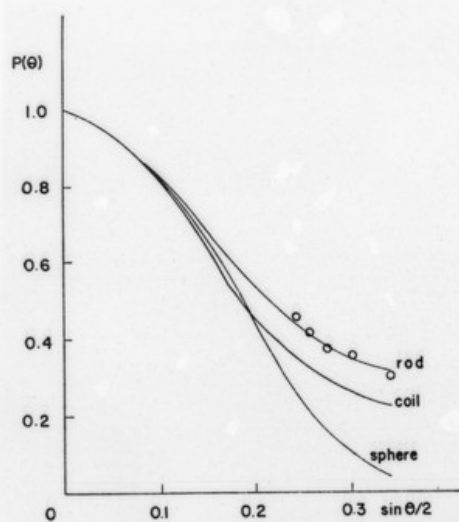


Fig. 3. Comparison of the particle scattering function of bovine submaxillary mucin in water (○—○), with theoretical functions for a sphere ($D = 6700\text{\AA}$), for a rod ($L = 8960\text{\AA}$) and for a polydisperse random coil (root mean square end-to-end distance 6350\AA). The $(R_g^2)^{1/2}$ for all theoretical curves is 2590\AA .

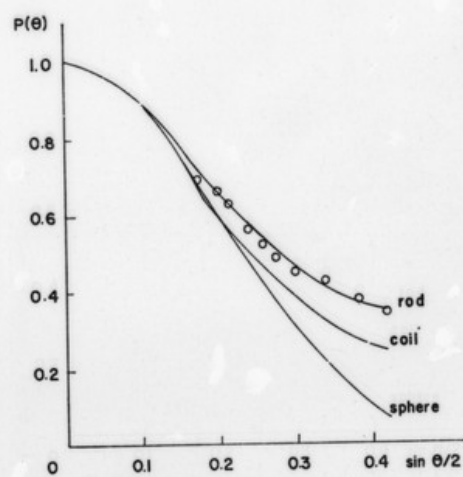


Fig. 4. Comparison of the particle scattering function of bovine submaxillary mucin in 0.1 M NaCl (○—○), with theoretical functions for a sphere ($D = 5050\text{\AA}$), for a rod ($L = 6800\text{\AA}$) and for a polydisperse random coil (root mean square end-to-end distance 4800\AA). The $(R_g^2)^{1/2}$ for all theoretical curves is 1960\AA .

The zero angle slope of the ZIMM plot gives $2BM_w^2/1000$ which contains the solvent-solution interaction parameter B . As seen from Table I, the decrease of slope with ionic strength indicates that the presence of the salt diminishes the solubility of the mucin. This effect can probably explain the slight increase in molecular weight