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Solute-protein interactions: Variations in correlation times and spin label mobility. MANDY BLACKBURN, LUIS GALIANO, ANGELO VELORO, GAIL FANUCCI, Univeristy of Florida — Using EPR, NMR and fluorescence spectroscopy, the effects of several viscogen monomers (sucrose, glycerol, and ethylene glycol) and macromolecular crowding polymers (Ficoll400 and various size polyethylene glycols (PEG)) on the mobility of spin labels at aqueous exposed sites in the flap of HIV-1 protease, the correlation time of this protein, as well as conformation of the hair pin flaps were investigated. Results show that, as expected, protein correlation time is more strongly altered by the small viscogens compared to the macromolecular crowders. On the other hand, EPR line shapes reveal that the chemistry (ie hydrophobicity) and not the size of the solutes correlates to changes seen in the spectra. The conformations of the β-hair pin flaps in HIV-1 protease were unchanged by any of solutes as determined by pulsed EPR distance measurements. Thus, indicating that specific solute interactions with the surface of the protein are responsible for the changes observed in the EPR spin label spectra.

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