

Effects of Hofmeister Salts on the Self-Association of Glucagon[†]

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ABSTRACT: The trimerization constants of glucagon at pH 10.6 in 0.76 M K_2HPO_4 have been calculated from circular dichroism data between 5 and 50 °C. The free energy, enthalpy, and entropy of transfer have been evaluated from the current results and published data in 0.20 M phosphate. The free energies of transfer from 0.20 to 0.76 M phosphate are negative at all temperatures investigated. The negative free energies of transfer are derived completely from an increase in the entropy of transfer, since the enthalpy of transfer is less favorable at all temperatures. These parameters are compared

with those of various model groups and compounds: CH_2 , peptide, methane, ethane, and the 1–13 N-terminal fragments of ribonuclease. The effects of fluoride and chloride on the self-association of glucagon have been compared with that of phosphate at 25 °C. These effects are consistent with the binding of approximately one molecule of salt to the trimer and a systematic decrease in the number of water molecules bound to the trimer compared to the monomer for the series K_2HPO_4 , KF, and KCl.