

Abstract Submitted
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Intermolecular interactions of reduced nicotinamide adenine dinucleotide (NADH) in solution¹ JOSHUA JASENSKY, M. JUNAID FAROOQI, PAUL URAYAMA, Miami University — Nicotinamide adenine dinucleotide (NAD⁺/NADH) is a coenzyme involved in cellular respiration as an electron transporter. In aqueous solution, the molecule exhibits a folding transition characterized by the stacking of its aromatic moieties. A transition to an unfolded conformation is possible using chemical denaturants like methanol. Because the reduced NADH form is fluorescent, the folding transition can be monitored using fluorescence spectroscopy, e.g., via a blue-shift in the UV-excited emission peak upon methanol unfolding. Here we present evidence of interactions between NADH molecules in solution. We measure the excited-state emission from NADH at various concentrations (1-100 μ M in MOPS buffer, pH 7.5; 337-nm wavelength excitation). Unlike for the folded form, the emission peak wavelength of the unfolded form is concentration dependent, exhibiting a red-shift with higher NADH concentration, suggesting the presence of intermolecular interactions. An understanding of NADH spectra in solution would assist in interpreting intercellular NADH measurements used for the *in vivo* monitoring cellular energy metabolism.

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