

Assessment of GABARAP self-association by its diffusion properties

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Gamma-aminobutyric acid type A-receptor-associated protein (GABARAP) belongs to a family of small ubiquitin-like adaptor proteins implicated in intracellular vesicle trafficking and autophagy. Biochemical evidence, as well as observations from X-ray crystallography, supports the view that GABARAP shows a propensity to oligomerize in solution. Here, we have used diffusion-ordered nuclear magnetic resonance spectroscopy (DOSY-NMR) to study the temperature and concentration dependence of the diffusion properties of GABARAP. Our data suggest the presence of distinct conformational states and provide support for self-association of GABARAP molecules. Assuming a monomer-dimer equilibrium, the mass fraction of the dimer could be determined for every condition. Based on a series of ^1H - ^{15}N -heteronuclear single quantum coherence (HSQC) NMR spectra recorded at different temperatures, we propose residues potentially involved in GABARAP self-interaction.