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RGA & GAI: On the characterization of two DELLA plant growth repressor proteins

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DELLA proteins are a family of nuclear proteins responsible for plant growth modulation. They act as growth repressor proteins in response to gibberellin signaling pathways. Five DELLA protein homologs were found in *Arabidopsis thaliana*, namely, RGA (Repressor of Gibberellic Acid), GAI (Gibberellic Acid Insensitive) and three RGA-like proteins (RGL-1, RGL-2 and RGL-3). The RGA- DELLA and GAI-DELLA protein homologs have been classified as Intrinsically Unstructured Proteins (IUPs) that undergo a disorder-to-order transition upon receptor binding. This structural change has found to be physiologically relevant for biological signaling and molecular recognition. Thus, in order to better characterize the structural features and molecular changes that govern these conformational variations of the polypeptide chain, we have produced recombinant RGA-DELLA and GAI-DELLA proteins in three length-versions, i.e. full-length, N-terminal and C-terminal versions. Full-length and terminal versions present different sequence motifs, attributed to different biological functions. All proteins were analyzed spectro-photometrically, via Light Scattering (LS), Circular Dichroism (CD) and intrinsic and extrinsic fluorescence (ANS binding), in order to compare spectral profiles, secondary structure propensities, levels of solvent exposure and structural compactness. Full-length and terminal variants exhibit different behaviors, spectral profiles and levels of compactness that can be related to different protein domains and ultimately to different functional implications.

Biography

Daniela C Vaz has completed her PhD in Biological Chemistry from the University of Coimbra. Her research focuses on protein structure, folding and stability in relation to function and disease. She is currently working as a Professor at the School of Health Sciences of Leiria and is also a Member of the Coimbra Chemistry Centre at the University of Coimbra, Portugal.

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