Probing domain-swapping of prion protein

Jae-Yoon Shin, Youngmi Lee, Dae-Hyuk Kweon
School of Bioresource Sciences, Andong National University, Andong, Kyungbuk, 760-749 Korea
TEL: +82-54-820-6157 FAX: +82-54-820-6264

Transmissible spongiform encephalopathies, including bovine spongiform encephalopathy and human Creutzfeldt-Jakob disease, are fatal neurodegenerative disease. The protein-only hypothesis[1] holds that prion proteins are the infectious agents of transmissible sponfiform encephalopathies. Two molecular forms of the prion protein, the infectious form (PrP^{Sc}) and the normal cellular form (PrP^{C}), are believed to differ only by their conformation. PrPSc has been found to differ from PrP^{C} by infectivity, an increased β-sheet content, an increased resistance to proteinase K and an oligomeric state rather that a monomeric state.

In the present study, we deals with prion's structure whether if prion-engaged fibers are domain swapped oligomer[2,3]. By adopting several recently reported methods by which is PrP^{C} refolded into PrP^{Sc}-like form, we wanted to see if they are domain swapped. Some gel electrophoresis methods and electron paramagnetic resonance spectroscopy[4] and flourescence spectroscopy shows that some of these fibers are domain swapped oligomers.

References

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