Mussel Cuticle Coating Protein Secondary Structure Analysis Using Circular Dichroism (CD)

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Marine mussels have the ability to anchor themselves to wet surfaces and resist a variety of mechanical stresses by using a fibrous structure called byssus. The individual threads that compose the byssus are able to extend more than 100% under strain, making the byssus an excellent model to follow in order to produce novel coating materials that are both hard and extensible. Mussel foot protein 1 (Mfp1) is the only protein detected to date in the byssus cuticle. Despite its importance, Mfp1 secondary structure has not been clearly characterized. In an effort to gain more insight in the Mfp1 secondary structure, we examined by circular dichroism (CD) native and recombinant Mfp1 proteins.