**ABSTRACT**

Cortactin is an actin-binding protein that has been shown to be involved in cellular migration and metastases in cancer. Bacterially expressed and purified cortactin protein is often used in in vitro assays to examine cortactin’s role in promoting cell migration via actin remodeling. Cortactin has a theoretical molecular weight of 60 kDa, however using SDS-PAGE analysis the protein runs as two bands of molecular weights 80 kDa and 85 kDa suggesting that cortactin has an unusual protein folding pattern. Our current lack of understanding of cortactin structure limits our ability to determine the role of cortactin in facilitating motility phenotypes. To elucidate the forms of cortactin produced from bacterially expressed and purified cortactin protein, we used a two-step purification system including affinity purification and anion exchange chromatography. After analysis with non-denaturing polyacrylamide gel electrophoresis, we found cortactin protein from different anion chromatography elution fractions did not separate to similar locations on the gel across all fractions. We hypothesize that the variations in the bands are a result of different folding patterns of cortactin protein in what was once thought of as a homogenous protein pool. When testing the role of cortactin in mediating cell migration, these folding differences may have significant effects on the results of functional assays such as actin polymerization or sedimentation.

**RESULTS & DISCUSSION**

After finding the different banding patterns of cortactin among the different fractions of KCl elutions, we concluded that our hypothesis was possible. There seems to be definite structural differences between the cortactin proteins in the different elutions. The significance of the differences remains to be seen through functional assays of their actin assembly activity.

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**REFERENCES**