

**Expression of *E.coli* capsular polysaccharide requires the KfiB protein:  
A Structural based analysis**

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**Abstract**

**Background and objectives:** Capsular polysaccharide expression is an important virulence factor for many invasive bacterial pathogens of humans. *Escherichia coli* offer a model system to study the mechanisms by which capsular polysaccharides are synthesized and exported onto the cell surface of bacteria. Biosynthesis of the *E. coli* K5 capsular polysaccharide, which consists of the repeat structure -4) GlcA- $\beta$ (1, 4)-GlcNAc- $\alpha$ (1-, requires the KfiA, KfiB, KfiC, and KfiD proteins. Until now, the role of all proteins except KfiB have been known.

**Material and Methods:** To study the role of the KfiB protein, a full-length (pMA1) and several derivatives of KfiB expression construct (pMA2-6) were made with a 6Xhis-tag at the N-terminus. The presence of the hexa histidin tag facilitated purification of the KfiB protein using Ni<sup>2+</sup>-NTA chromatography.

**Results:** All plasmids except pMA1 failed to complement the mutation in pPC6::23 and restore capsule production. Successful complementation by pMA1, showed that the fused hexa-histidine tag did not interrupt the function of KfiB and that the full-length KfiB is required for complementation.

**Conclusion:** Localization studies revealed that KfiB is associated with the cytoplasmic membrane.

**Key words:** *Escherichia coli*, Capsular polysaccharide, KfiB, K5