

## Expression of IpaD of *Shigella flexneri* in Tobacco plant and *Escherichia coli*, which one is the better choice?

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**Background and Aims:** Bloody diarrhea (dysentery) is one of the acute gastrointestinal diseases and *Shigella* species being an important–etiological agent in our country. *Shigella flexneri* causes human dysentery after invading the colon epithelium. One of the *Shigella flexneri* virulence factors is *ipaD* gene which is located on a 220 kb plasmid. It has been shown that antibody produced against the protein expressed by this gene can block bacterial adhesion to intestine epithelial cells. In this study transient expression of *Shigella flexneri ipaD* gene in Tobacco is compared with expression in *Escherichia coli*.

**Methods:** We cloned and expressed-*ipaD* gene in tobacco plants. The *ipaD* gene was amplified by PCR and the amplified sequence was cloned in pCAMBIA1304. Agroinfiltration was used for transient expression by introducing the expression vector into *Agrobacterium tumefaciens* strain LBA4404. In order to express *ipaD* in *E. coli* the gene was cloned in pBAD/gIII A and expression was induced by Arabinose.

**Results:** IpaD expression in *E. coli* was approximately 400 mg/ml of bacterial culture, the amount of protein produced in tobacco plants was not quantified but the expression level was comparatively low.

**Conclusions:** In recent years plants have increasingly been used for recombinant protein production due to lower cost, ease of scale up and being free from harmful endotoxin in cultured cells. This study showed that for some of the pharmaceutical proteins there is a strong need for optimisation of this process to overcome the low level of expression.

**Keywords:** *Shigella flexneri*; *Escherichia coli*; *ipaD*; expression;