UNDERSTANDING THE INVASIVE PROPERTIES OF ADHERENT-INVASIVE \textit{ESCHERICHIA COLI} (AIEC) AND THE LINK WITH INTESTINAL IMMUNE RESPONSES

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Adherent-invasive \textit{Escherichia coli} (AIEC) is one \textit{E. coli} pathotype recently under extensive investigation, not because its association with diarrhea, but due to its association with Crohn disease (CD). However it is still not well defined if AIEC can contribute to the onset of CD pathology or if mainly displays characteristics that are allowing the organism to proliferate in the ileum of CD patients. It is considered that invasive capability of the intestinal epithelium and the inflammatory properties are the hallmarks of the AIEC phenotype and; therefore, these areas require further study. We hypothesized that \textit{IbeA}, a putative invasin found in AIEC, plays a functional role on the bacterial invasive properties of the host cell. It is worth noting that \textit{IbeA} has only been previously described in 2 extraintestinal \textit{E. coli} pathotypes and no role in AIEC has been elucidated. In our laboratory, we have generated a non polar \textit{IbeA} deletion and studied its effect on AIEC adhesion and invasion of Caco-2 intestinal cells. We have observed a significant reduction in invasion ($p=0.005$), while adhesion was not affected. Regarding AIEC inflammatory properties, our study is defining how AIEC upon invasion of the intestinal epithelium, can contribute to the generation of M1 macrophages, through the induction of mediators on the epithelium. Preliminary results indicate that AIEC recruit immune cells to the site of infection and also that the bacteria can be taken up by macrophages, surviving intracellularly. Therefore, our data indicates that AIEC invades intestinal epithelial cells and survives inside macrophages, which subsequently will have an effect on host immune responses and inflammation.