

TITLE: ANALYSIS OF INTERACTION BETWEEN DISPERSIN AND PLASMINOGEN IN PATHOGENESIS OF *ESCHERICHIA COLI* ENTEROAGGREGATIVE (EAEC)

AUTHORS: LONGO, J.; BARBOSA, A. S.; SILVA, L. B.; ELIAS, W. P.; MORAES, C. T. P.

INSTITUCION: INSTITUTO BUTANTAN, SÃO PAULO, SP (AV. VITAL BRASIL 1500, CEP 05503-900, SÃO PAULO-SP, BRAZIL)

ABSTRACT:

Escherichia coli are Gram-negative bacilli that belong to the human intestinal microbiota, although some clones are pathogenic and may cause intestinal and extra-intestinal diseases. Enterotoxigenic *Escherichia coli* (EPEC) is one of the diarrheagenic *E. coli* pathotypes that is often associated to traveler's and persistent diarrhea. Besides, EAEC serotype O104:H4 caused a major food-borne outbreak in Germany in 2011 infecting over 4,000 individuals and leading to 53 deaths. This pathotype carries a plasmid (pAA) which harbors some virulence genes such as *aap* that codes for dispersin. Dispersin is a 10.7 kDa immunogenic protein produced by EAEC, which binds to LPS and overcomes electrostatic attraction between aggregative adherence fimbria (AAF) and bacterial surface, assisting bacteria dispersion in the intestinal mucosa. Plasminogen (Plg) can be activated and converted into plasmin (Pla), which can promote extracellular matrix (ECM) disruption. ECM components such as collagen I and IV (Col I / IV), plasminogen activator (Fp) and cellular (Fc) fibronectin and laminin (Lam) work as a protective barrier in mammalian tissues. Some bacteria present mechanisms to activate Plg into Pla which can lead to ECM degradation, facilitating microorganism's invasion. ELISA assays were performed to verify the interaction between recombinant purified dispersin from prototype EAEC 042 and Plg, Fibrinogen (Fbg), Col I, Col IV, Fp, Fc and Lam. The results showed that dispersin can bind significantly to Plg in a dose dependent manner. EAEC strains are normally non-invasive bacteria and infection rarely reaches the bloodstream. However, some extraintestinal *E. coli* (ExPEC) may harbor EAEC virulence markers such as dispersin. We are currently investigating the relevance of the interaction between Plg and dispersin in the pathogenesis of this *E. coli* pathotype.

Keywords: *Escherichia coli*, EAEC, dispersin, plasminogen

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