

The role of a complex oral pathogen in oral cancer progression and prevention

Meena Vanamala

University of Dundee, UK

Worldwide Oral Cancer incidence rates have consistently placed the disease among the top 10 most frequently occurring cancers. Amongst the range of etiological agents implicated in its initiation and progression, oral bacteria have only recently gained attention. The anaerobic Gram-negative bacterium *Fusobacterium nucleatum*, found in the mouth and GI tract is recognized as a mediator of periodontal disease, still births and a subset of colorectal cancers. In the intestine model of carcinogenesis, the distinctive adhesin FadA of *F. nucleatum* binds to E-Cadherin and induces pro-inflammatory and oncogenic protein pathways. Our study involved the investigation of cellular response of an oral dysplastic cell line, D20 to FadA and a related protein FadB. The relative changes in cellular signaling of four different markers NF-κB phosphor, C-myc, β-catenin and E-cadherin (known markers of inflammation, cell proliferation, oncogenesis, adhesion and invasion respectively) were measured using western blotting and the recently developed systems level proteomics method, Digiwest. Analysis of quantified data showed that FadA and FadB upregulate the same pathways in a mildly dysplastic oral cancer cell line as have previously been described for Colorectal cancer. Data from MTT and Trypan blue assays confirmed that these two proteins promote increased cellular proliferation of the D20. This study gave us new insights into the potential role of *F.nucleatum* FadA proteins in oral cancer, and in the process highlights the therapeutic possibilities of exploiting these molecules to design diagnostic screens, to develop them as targets for small molecule inhibitors and potentially to use them as vaccine candidates.

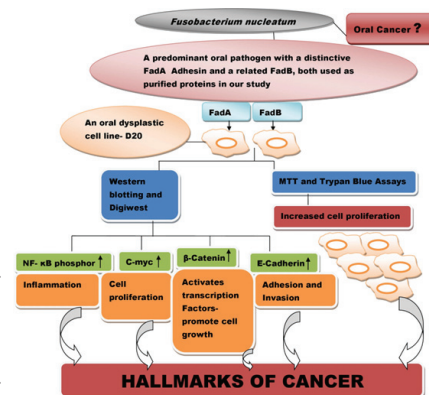


Figure 1: Cellular responses of an oral dysplastic cell line to purified proteins FadA and FadB of *Fusobacterium nucleatum*. (↑: increase/upregulation)

Biography

Meena Vanamala is a Dental Surgeon and a passionate young researcher. She received a Master of Research degree in Oral Cancer from the University of Dundee, United Kingdom. Her research on role of *Fusobacterium nucleatum* in oral cancer progression has garnered novel results and has extended the reach of this research to new horizons. She is currently working towards publishing her work in this subject. She plans to pursue a PhD and broaden her experience and perspective with a hope to contribute to a meaningful change. She loves reading and is fascinated by the cultural diversity across the globe.

meena.vanamala@gmail.com