Nihal S Mulla et al., J Clin Cell Immunol 2017, 8:5 (Suppl)
DOI: 10.4172/2155-9899-C1-039



## Adjuvanted allogeneic breast cancer vaccine: Maximizing cancer treatment by modulating the host immunity

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The aim of this study was to formulate and test the immunogenecity and efficacy of orally delivered microparticle based therapeutic adjuvanted breast cancer vaccines. CpG and cyclophosphamide were used as adjuvant and T-reg inhibitor respectively in order to maximize the immune response against tumor associated antigens (TAA's). Allogeneic breast cancer vaccine was obtained by preparing a whole tumor lysate consisting of all the TAA's of 4TO7 murine breast cancer cell line. Cellulose based vaccine microparticles containing TAA's and CpG were prepared by spray drying (Buchi 190). Antigenicity of the vaccine mp's was evaluated by a dendritic cell culture based assay. As part of the therapy, four-eight week old female Balb/c mice received oral vaccine microparticles as well as the adjuvant CpG and T-reg inhibitor cyclophosphamide (50 mg/kg; i.p). To asses the *in vivo* efficacy of vaccine mp's, all the animals were challenged with $10^6$ breast cancer cells subcutaneously. Tumor growth was monitored and immune organs like spleen, lymph node and bone marrow were collected for investigating the type of immune response generated. The particles were found to be in the size range of 4-5 µm with a zeta potential of +20±5 mV. According to *in vitro* studies, adjuvanted vaccine particles induced the highest immune response and showed maximum survival when compared to groups receiving blank particles. The findings proved that particulate nature of vaccine helps in better uptake of antigens by immune cells and immune recognition due to the presence of toll like receptor 4 (TLR-4) agonist, CpG.

### Biography

Nihal S Mulla has completed his PhD from Mercer University, Atlanta and Master's in Pharmaceutical Sciences from Creighton University, Omaha. He has presented at several international conferences and published in reputed journals and publication houses. He is an active Member of the American Association of Pharmaceutical Scientists and American Association of Colleges of Pharmacy.

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