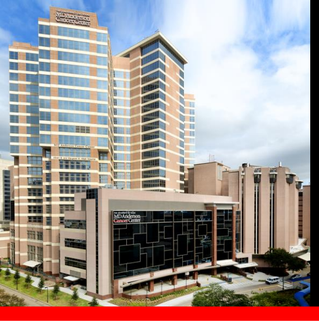

Enhanced anti-tumor immunity in estrogen receptor negative mammary tumors via vitamin E administration

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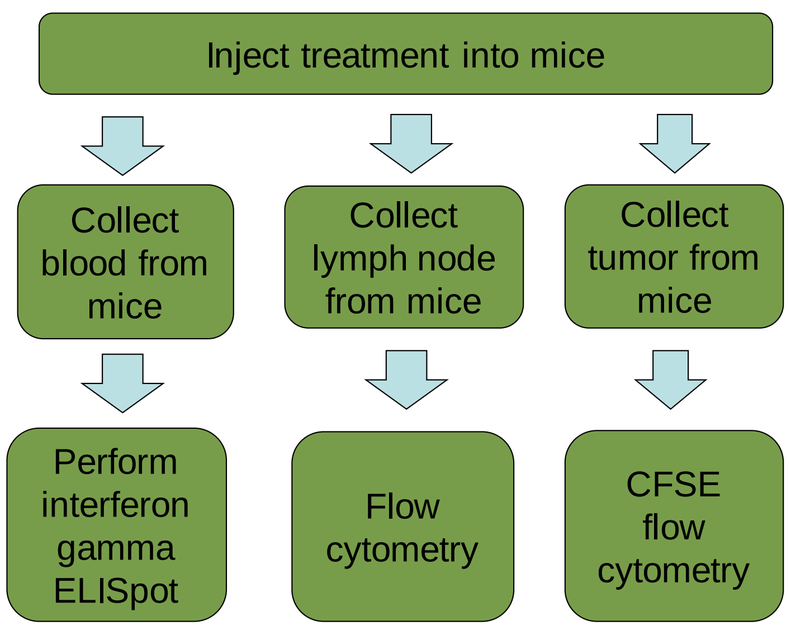
Background

- Most cancer vaccines that seek to enhance immune surveillance do not induce effective responses in all patients, especially in poorly immunogenic cancers such as estrogen receptor negative breast cancer.
- One strategy to increase their efficacy is to enhance antigen uptake and presentation by dendritic cells, which are critical to adaptive immunity and the function of these vaccines.
- Previous research has demonstrated that Vitamin E (VitE) can increase dendritic cell activity & therefore has the potential to aid in enhancing the antigen uptake of dendritic cells.
- **Hypothesis:** Vitamin E can act as an immunologic adjuvant when administered alongside cancer vaccines and can enhance dendritic cell immunity and anti-tumor immune response.

Materials & Methods

Treatment Groups:

Vehicle	Vitamin E
Vaccine (GVAX or peptide)	Vaccine (GVAX or peptide) + Vitamin E



Results

Dendritic Cell Antigen Uptake

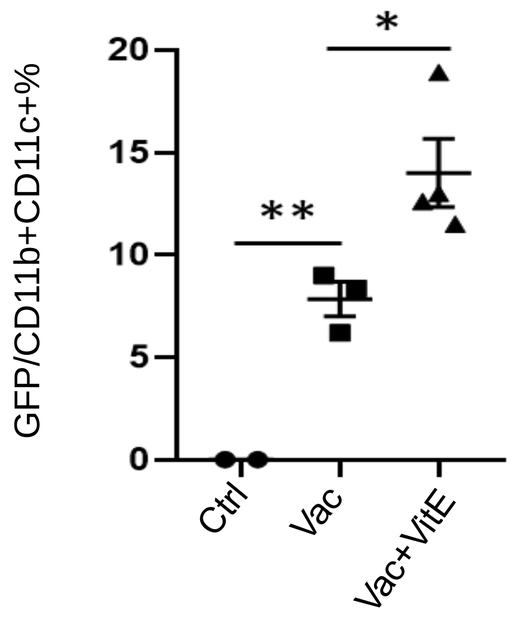


Figure 1. Dendritic cell antigen uptake measured in BALB/C mice via flow cytometry demonstrates that the addition of VE can increase dendritic cell uptake. Vaccine: 4T1-GFP.

T-cell Proliferation

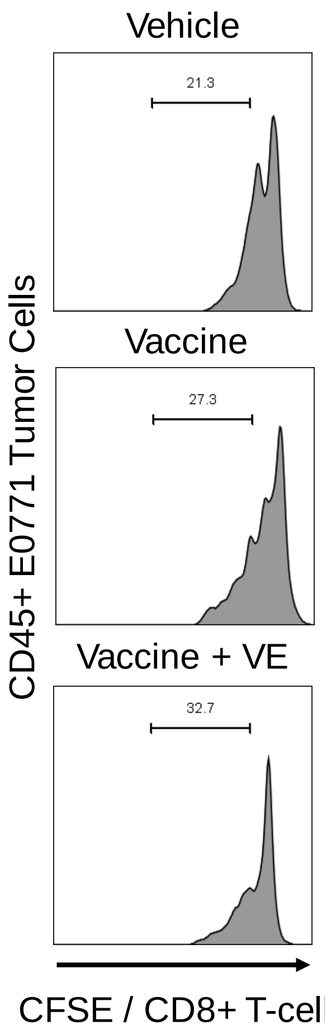


Figure 2. Analysis of T-cell response by Carboxyfluorescein succinimidyl ester (CFSE) assay using flow cytometry revealed that tumor infiltrating T-cell proliferation increased slightly when the vaccines were supplemented with Vitamin E**.** C57BL/6 mice were utilized, and each group had n=2. Vaccine injections consisted of 1m E0771-GMCSF and were given on day 0 and 7. The tumors were collected on day 12.

Antigen Specific Immune Response

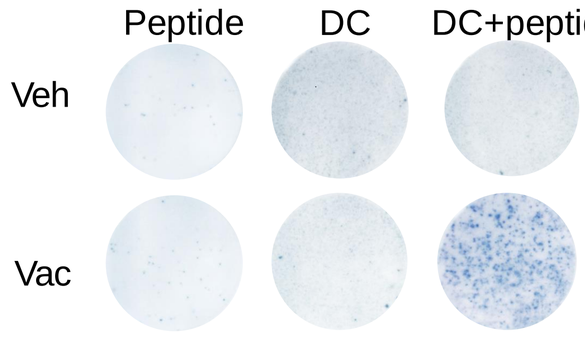


Figure 3. Pilot test revealed that dendritic cells are required for T-cell activation.

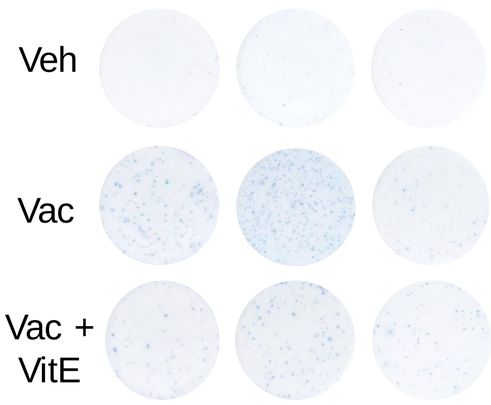


Figure 4.INFγ ELISpot confirmed an increased antigen specific T-cell response with the Neu/IGF-IR/IGFBP-2 peptide vaccine. However, Vitamin E showed no significant difference.

Conclusions

- Vitamin E administered alongside cancer vaccines showed increased dendritic cells antigen uptake in ER negative breast cancer models.
- Found a slight increase in antigen-specific T-cell responses when cancer vaccines were administered with Vitamin E. Future research should repeat this data.

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