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:**

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Vitamin E</th>
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<tbody>
<tr>
<td>Vaccine (GVAX or peptide)</td>
<td>Vaccine (GVAX or peptide) + Vitamin E</td>
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**T-cell Proliferation**

Inject treatment into mice

- Collect blood from mice
- Collect lymph node from mice
- Collect tumor from mice
- Perform interferon gamma ELISpot
- Flow cytometry
- CFSE flow cytometry

**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 Proportion**

Vaccine + VE

**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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**References**
