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An evaluation of the humoral immune response generated by the inoculation of a multi-peptide-based vaccine prototype derived from tumoral antigens of breast cancer in Balb/C mice

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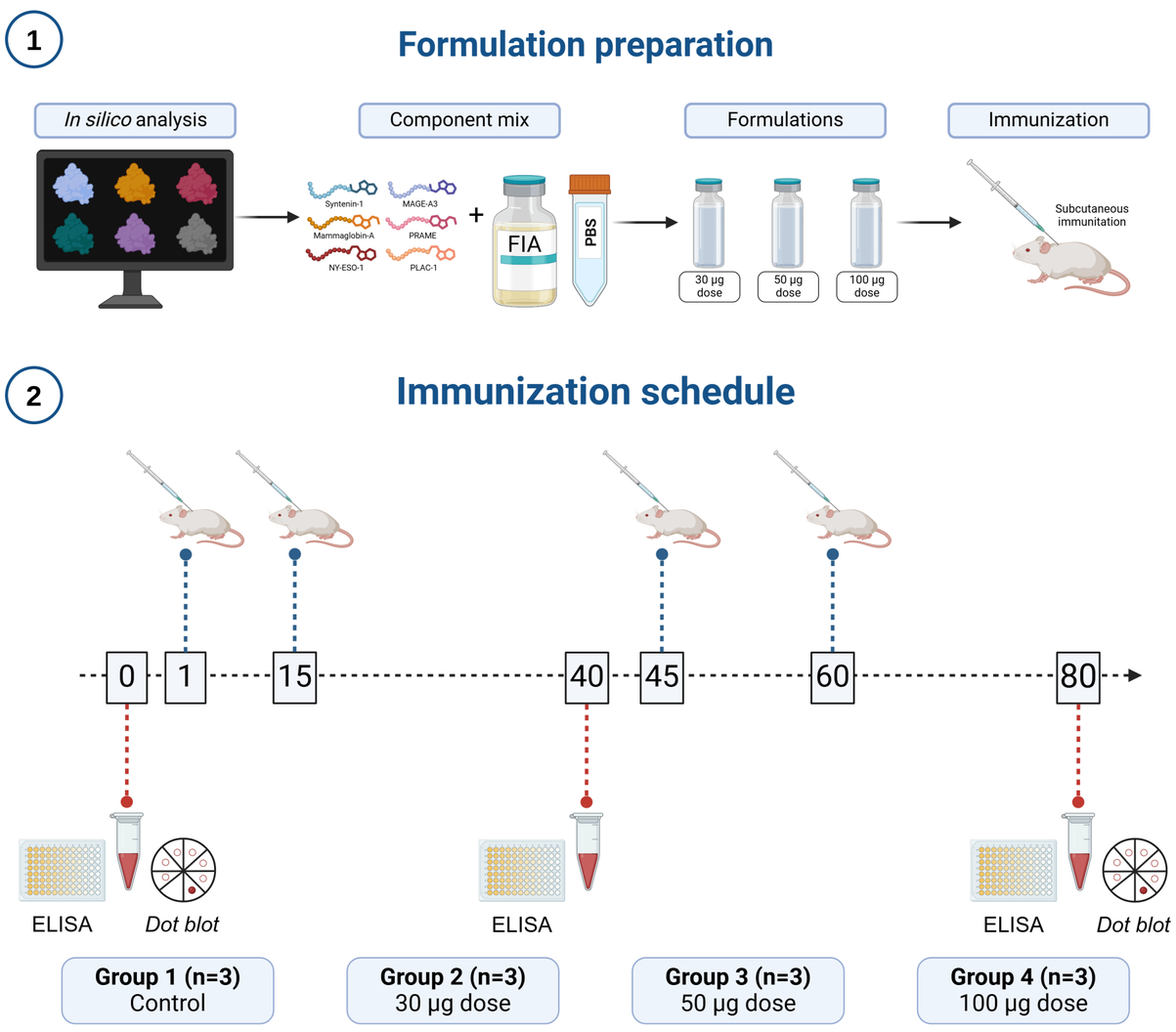
Introduction & Aim

Breast cancer is the most diagnosed type of cancer in women and the leading cause of death by cancer worldwide. In recent years, active immunotherapy using vaccines has been raised as a novel approach to conventional treatments. Peptide-based vaccines are developed using overexpressed proteins in the tumor, commonly known as tumor antigens, that can stimulate the humoral immune response. The aim of our study was to evaluate in Balb/c mice the production of antibodies induced by the inoculation with doses of 30, 50, and 100 µg of the multi-peptide-based vaccine prototype for breast cancer derived from tumoral antigens.

Methods



Results

We observed the production of IgM and IgG subclasses in the three experimental groups (30, 50, and 100 µg), mainly, the subclasses IgG2a and IgG2b. In the Dot blots, we observed that immunized mice produce antibodies against all the peptides, particularly the peptides derived from Syntenin-1, PRAME, mammaglobin-α, and PLAC-1 were the most immunogenic.

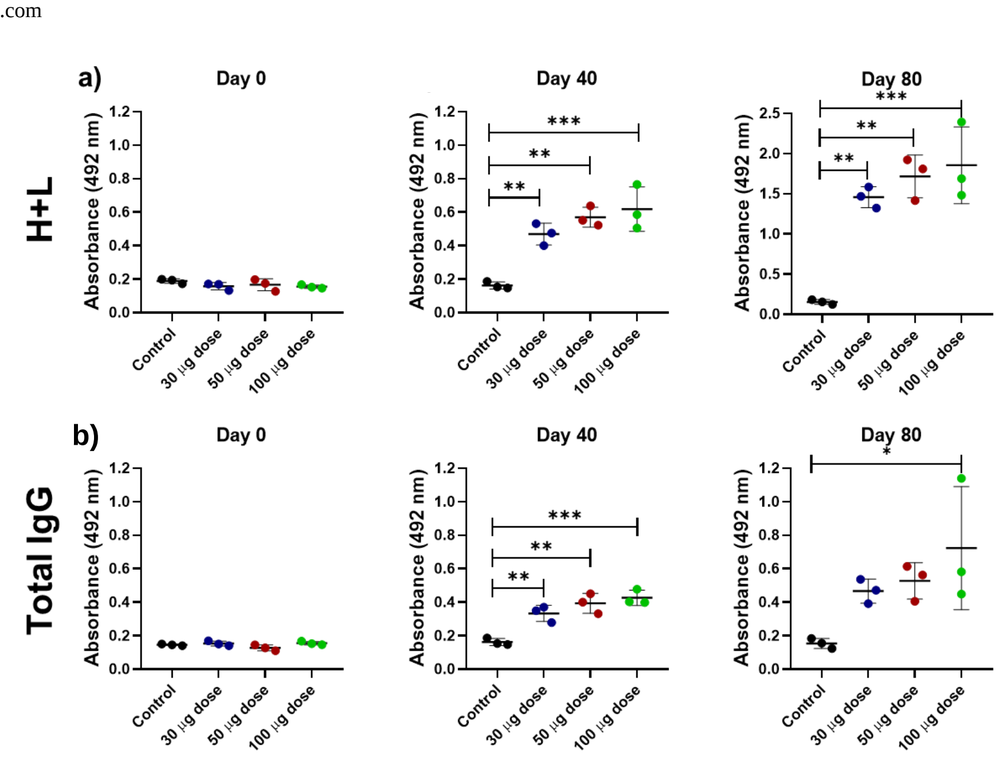


Figure 1. The administrated multi-peptide vaccine prototype induced antibody production. Evaluation of total antibody (H+L) (panel a) and IgG (b) production during the days 0, 40 and 80 post-immunization. Method: Indirect ELISA.

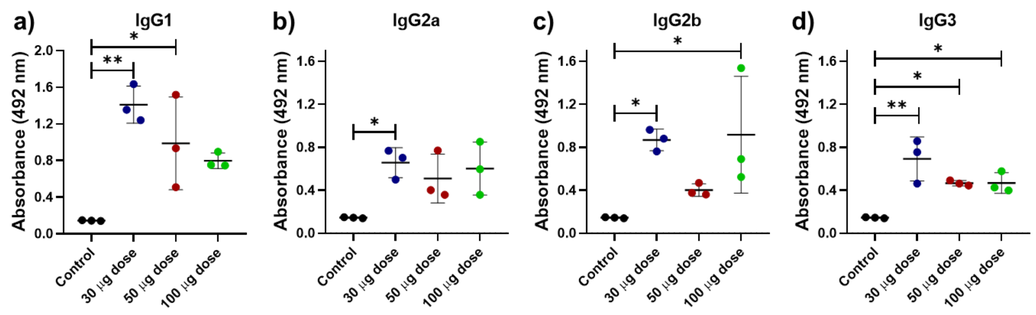


Figure 2. IgG Subclasses induced by the inoculation of the multi-peptide vaccine prototype. Evaluation of IgG subclass production in the serum samples collected on days: 0 and 80 post-inoculation. Method: Indirect ELISA using monoclonal antibodies against each subclass.

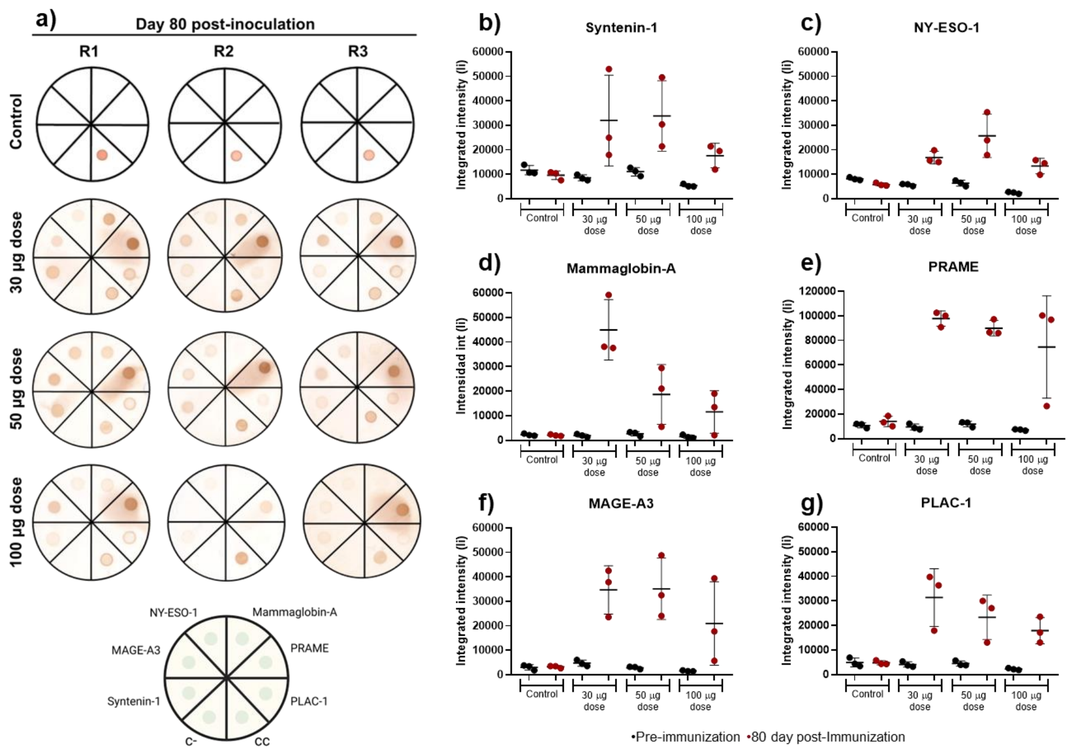


Figure 3. The serum sample derived from the Balb/c mice immunized with the multipeptide-based-vaccine prototype recognized individual peptides. Dot blot test to evaluate the individual recognition of peptides by using serum samples derived from immunized mice with the prototype. a) Crude results and design of the experiment. b-g) Integrated intensity plots of each antigen. Black dots preimmunization serum. Red dots 80 days post-immunization.

Conclusion

The multi-peptide-based vaccine prototype induced antibody production against each peptide. Results can contribute to the development of future *in vivo* experiments focused on the effect of the administration of peptides on avoiding tumoral growth.

References

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