

## **Peptide-Based Vaccine against Breast Cancer: Recent Advances and Prospects**

### **ABSTRACT**

Breast cancer is considered the second-leading cancer after lung cancer and is the most prevalent cancer among women globally. Currently, cancer immunotherapy via vaccine has gained great attention due to specific and targeted immune cell activity that creates a potent immune response, thus providing long-lasting protection against the disease. Despite peptides being very susceptible to enzymatic degradation and poor immunogenicity, they can be easily customized with selected epitopes to induce a specific immune response and particulate with carriers to improve their delivery and thus overcome their weaknesses. With advances in nanotechnology, the peptide-based vaccine could incorporate other components, thereby modulating the immune system response against breast cancer. Considering that peptide-based vaccines seem to show remarkably promising outcomes against cancer, this review focuses on and provides a specific view of peptide-based vaccines used against breast cancer. Here, we discuss the benefits associated with a peptide-based vaccine, which can be a mainstay in the prevention and recurrence of breast cancer. Additionally, we also report the results of recent trials as well as plausible prospects for nanotechnology against breast cancer.