Human chorionic gonadotrophin (hCG) and its □-subunit (hCG□) are tumour autocrine growth factors whose presence in the serum of cancer patients has been linked to poorer prognosis. Previous studies have shown that vaccines which target these molecules and the 37 amino acid C-terminal hCG□ peptide (hCG□ CTP), induce antibody responses in a major fraction of the human recipients. In the present study, we explored the possibility that we could enhance the immunogenicity in mice, of vaccines containing an hCG□ mutant (BAChCG□R68E), designed to avoid cross-reactivity with luteinizing hormone (LH), or hCG□CTP itself by coupling the immunogen to different carriers (KLH Hsp70), using different cross-linkers (EDC and GAD) or formulating them with different adjuvants (RIBI and Montanide ISA720).

While there was little to choose between KLH and Hsp70 as carriers, and their coupling to hCG□CTP was essential for immunogenicity, their influence on the effectiveness of a vaccine containing the BAChCG□R68E mutant was less marked, presumably because the protein could provide T-helper epitopes. The mutant provided a significantly better vaccine that the hCG□□CTP peptide irrespective of the carrier used, how it was cross-linked to the carrier and which adjuvant was used. Highest antibody titres were obtained by linking the antigen to carrier by GAD and using RIBI as the adjuvant, and the lack of cross-reactivity with LH would make this mutant vaccine a promising candidate for therapeutic studies in hCG□-positive cancer patients.