Protective and disease-enhancing immune responses induced by recombinant modified vaccinia Ankara (MVA) expressing respiratory syncytial virus proteins.

Abstract:
Modified vaccinia Ankara (MVA) recombinants expressing single or multiple RSV surface proteins (F or G) are promising potential vaccines. We studied humoral and cellular responses induced by MVA-F and MVA-G in mice, comparing them to a formalin inactivated RSV preparation (FI-RSV) known to increase disease severity. MVA-F or MVA-G vaccination enhanced weight loss during RSV challenge, but did not show the lung eosinophilia seen after FI-RSV vaccination. FI-RSV induced a stronger total RSV IgG response than the MVA recombinants, but very little IgG2a. MVA recombinants induced cytokine responses biased towards IFNgamma and IL-12, while FI-RSV induced strong IL-4/5 responses in the lungs during RSV challenge. Thus, MVA vaccines induce a favourable immune profile in RSV disease but retain the potential to enhance disease.