

Oral vaccine of *Lactococcus lactis* harbouring pandemic H1N1 2009 haemagglutinin1 and nisP anchor fusion protein elevates anti-HA1 sIgA levels in mice

ABSTRACT

Objective: An oral lactococcal-based vaccine which harboured the haemagglutinin1 (HA1) antigen fused to nisP anchor protein for the purpose of surface displaying the HA1 antigen was developed against H1N1 virus. **Results:** Recombinant *L. lactis* strains expressed HA1-nisP fusion proteins when induced with nisin, as confirmed through western blotting. However, immunofluorescence did not detect any surface-displayed proteins, suggesting that the protein was either unsuccessfully translocated or improperly displayed. Despite this, oral administration of recombinant *L. lactis* strains to BALB/c mice revealed that significant levels of anti-HA1 sIgA antibodies were detected in mice fecal suspension samples of mice group NZ9000 (pNZ:HN) when compared to the negative control NZ9000 (pNZ8048) group. **Conclusion:** Specific anti-HA1 sIgA antibodies were locally produced and live recombinant lactococcal vaccine was able to elicit humoral response of BALB/c mice despite unsuccessful surface display of the HA1 epitope.

Keyword: H1N1; Haemagglutinin; Influenza virus; *Lactococcus lactis*; Oral vaccine; Surface display; Vaccine