Induction of significant IgA antibody, CD73 and CD103 levels in intranasally administered BALB/C mice with influenza virus-like particle

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Background: Vaccination represents a highly effective approach to prevent the seasonal or pandemic outbreak of influenza. Influenza VLP vaccines were shown to be more immunogenic and to provide better protection than a commercial split vaccine, indicating the possibility that influenza VLPs could be considered as a new vaccine platform. Administration of VLPs by different routes has been shown to induced cellular and humoral immune responses. Given the fact that the respiratory mucosa is the initial line of defense against influenza, intranasal immunization offers an attractive route for vaccination against the pathogen. In this study, we have investigated the immunogenicity, protective efficacy, and immune biomarkers profiles following influenza VLPs vaccination of mice.

Material and methods: To evaluate the immunogenicity of our construct, we assessed the humoral, cytokine, and chemokine responses as well as expression level of two CD markers, CD73 and CD103, induced by H1N1-VLP in BALB/c mice immunized intranasally and intramuscularly. IgG and IgA antibody responses against VLPs administration were measured by Enzyme-linked immunosorbent assay. In addition, a quantitative ELISA and Relative quantitative Real-time PCR were used to evaluate protein and mRNA levels of CCL2, CCL3, CCL5, CD73, IL-6, CD103, TNFa, IL-10, IL-17, IL-28 and IFN-g immune biomarkers in immunized mice.

Results: Our results showed that VLP is capable of intranasally (I.N.) and intramuscularly (I.M.) induction of serum IgG and IgA responses. IgA was detected in mucosal samples of immunization groups by I.N. but not I.M. routes. Interestingly, I.N. route induced higher IgG and IgA titer compared with I.M. route which was statistically significant (Figure.1). Moreover, levels of IL-6 (4.5-folds), IFN-g (5.7-folds), and anti-inflammatory cytokine IL-10 (2.5-fold) were significantly elevated in mice immunized I.N. and I.M. with H1N1-VLP compared to control group. In contrast, CD73 (2.24-folds) and CD103 (2.89-folds) elevated levels were only found when mice immunized intranasally(Figure.2).

Figure.1

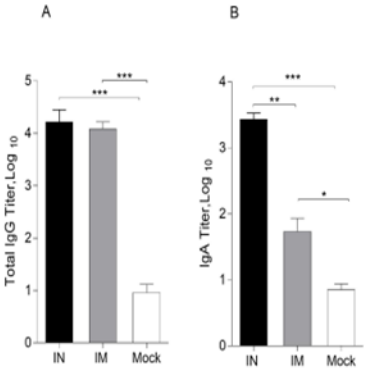
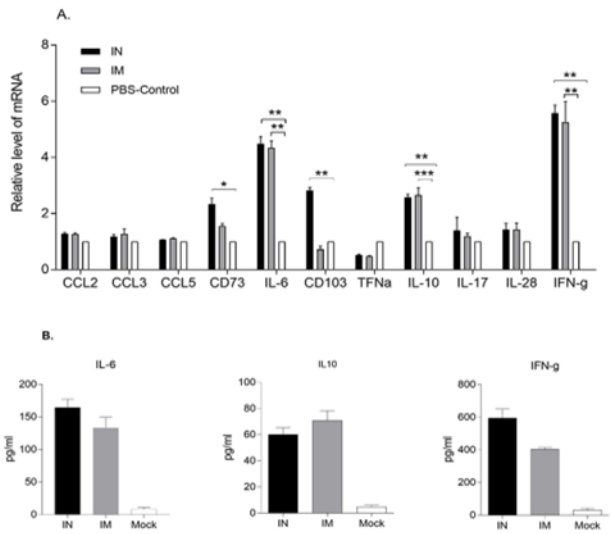


Figure.2



Conclusions: Our findings indicated that a non-infectious genome-less VLP approach mimic parenteral virus with multiple viral antigens and epitopes that stimulate a diverse set of immune responses such as innate immunity, specific serum IgG antibody, cell-mediated immunity and local IgA antibodies.

Acknowledgements:

This study was supported by Tehran University of Medical Sciences (TUMS), Grant No. 26555.

from north-eastern Italy

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EV0323

EV0315A **Induction of significant IgA antibody, CD73 and CD103 levels in intranasally administered BALB/C mice with influenza virus-like particle**

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EV0324

EV021 **08:45 – 15:30**

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EV0316 **Clinical outcomes following community-associated and hospital-associated hospital onset *Clostridium difficile***

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27th ECCMID Vienna, Austria 22 – 25 April 2017

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05 May 2017

To whom it may concern:

CONFIRMATION OF PRESENTATION AT ECCMID 2017

We hereby confirm that the following abstract has been submitted, accepted and presented at the 27th ECCMID, the European Congress of Clinical Microbiology and Infectious Diseases, which took place in Vienna, Austria, 22 – 25 April, 2017.

Title: Induction of significant IgA antibody, CD73 and CD103 levels in intranasally administered BALB/C mice with influenza virus-like particle

Abstract Authors: H. Namdari, F. Rezaei, Z. Amirghofran

Presenter: Farhad Rezaei

Session Title: New vaccine front

Presentation Type: ePoster viewing

Presentation Number: 5169

Yours sincerely,

Winfried V. Kern
ECCMID 2017 Programme Director