

6<sup>th</sup> Euro-Global Conference on

# INFECTIOUS DISEASES

September 07-09, 2017 | Paris, France

## Intranasal delivery of influenza virosomes for enhances of adaptive immunity genes expression

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Ease of the intranasal immunization makes it an attractive target for the administration of different forms of supramolecular organizations of influenza virus antigens. This is efficient way to deliver antigens to regional lymph nodes for specific T-cell activation. The controlled in vitro assembly of virus-like particles from purified components is the basic concept of virosomes. The first generation of influenza virosomes developed two decades ago is successfully applied in licensed vaccines, providing a solid clinical safety and efficacy track record for the technology. The main disadvantage of these vaccines was a more traumatic route of administration: intramuscular or subcutaneous. Intranasal immunization with virosomes may represent a novel effective strategy to directly modulation of adaptive immune responses in to the respiratory tract. Virosomes may not only serve as antigen carriers but are also endowed with intrinsic immune-stimulatory properties. Virosomes themselves are able to activate APCs and enhance antigen uptake and processing. Influenza virosomes were designed on the base of lipid microspheres with glycoprotein antigens for the investigation of adaptive immunity genes expression. The level of expression of adaptive immune response genes was determined in to the naïve BALB/c mouse peritoneal macrophages 24 hours after intranasal immunization. The genes expression of adaptive immunity was analyzed by Real-time PCR assay. The intranasal immunization with influenza virosomes induced a much higher expression of cytokine genes compared with micelles of influenza surface glycoproteins. Therefore intranasal administration of viral antigen by virosomes effectively induced adaptive immune responses and may be utilized in novel preventive or therapeutic approaches for vaccination.

### Biography

Aizhan Turmagambetova has her expertise in investigation of antiviral and immunostimulating activity of plant preparations isolated from plants of the flora of Kazakhstan. From various plants indigenous to Kazakhstan have been isolated numbers of perspective substances with broad spectrum of antiviral activity and high immunostimulatory capacity. Study of antigenic and immunogenic properties of viral antigens and dependence of their biological activity on supramolecular organization. It was shown that change of supramolecular organization of viral antigens may significantly influence on their immunostimulation activity. This is important for construction of highly immunogenic vaccine preparations. Earlier she was the manager of 2 national scientific projects (2012-2015) supported Kazakh National Scientific Funds.

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