

7<sup>th</sup> European

# Clinical Microbiology Congress

4<sup>th</sup> International Conference on &

# Ophthalmology and Eye Disorder

November 01-02, 2018 | London, UK



## Radka Argirova

Tokuda Hospital, Bulgaria

### Co-infection HIV/flu: From experimental model to individual health

Recently, *in vitro* model has been developed to study HIV-1 and influenza virus (Flu) co-infection based on HIV-1 sialoglycoprotein (Sgp) synthesis and virus replication in acute (MT2) and chronically (H9/HTLVIII B) double-infected cells. HIV-1 replication and gp120 concentration were quantified by specific tests (RT detection and gp120 Antigen Capture Assay, resp.) The co-infection provoked desialylation of HIV Sgps, followed by increased HIV replication. A hypothesis was outlined that exogenous neuraminidase (NA) (Flu) changes the configuration of HIV-1 gp120 through desialylation resulting in exposure of a novel antigen. Monoclonal antibody to the principal neutralizing determinant V3 but not the broadly reactive one against gp120 recognize and neutralize in concentration-dependent way the epitope newly exposed on HIV-1 virion after flu infection. The proposed model could contribute to better understanding of pathogenesis of flu co-infection in people living with HIV. *In vivo*, flu co-infection most probably leads to desialylation of both HIV and the cell surface, thus facilitating the escape of HIV from immune control. This fact coincides well with the increase of viral

load observed in HIV-infected persons with flu co-infection or after flu vaccination. The findings described here reflect the interaction between components of two viruses – NA of flu and Sgps on HIV-1 without considering the cell surface. The hypothesis is now extended to other exogenous agents containing NA in HIV-infected people. Moreover, without HIV infection, it has been reported that some sialylated glycoproteins can be desialylated *in vivo* by interaction with endogenous cellular NAs, thus changing their function.

#### Speaker Biography

Radka Argirova has many years of scientific and practical experience as a virologist, especially in the field of HIV, retroviruses and oncogenic viruses. She graduated from the Higher Medical Institute in Sofia in 1969. In 1973, she graduated from the Institute of Virology “Ivanovski” in Moscow, where she obtained a degree in medical sciences (Candidate of Medical Sciences). In 1987, she became an assoc. prof. in virology at the Institute of General and Comparative Pathology of the Bulgarian Academy of Sciences. Since 1994, she has been a doctor of medical sciences and since 1997, a professor of virology. She is currently working in Tokuda Hospital.

e: [radkaargirova@abv.bg](mailto:radkaargirova@abv.bg)

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