EuroSciCon

EuroSciCon Conference on

Microbiology & Virology

June 21-22, 2018
Paris, France

Xin Cao et al., Arch Clin Microbiol 2018 Voulume: 9
DOI: 10.4172/1989-8436-C3-010

ATG13 RESTRICTS VIRAL REPLICATION BY INDUCTION OF TYPE 1 INTERFERON

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Autophagy-related protein 13 (Atg13) belongs to ULK1 complex, which acts at an initial step of autphagy. Recently, an increasing number of studies have found that some of the functions differ from their classical role in autophagosome biogenesis. Autophagy-independent roles of the ATG proteins include resistance to pathogens, especially the antiviral function. According to the previous research findings, Atg13 could inhibit EMCV replication in U2OS and Hela cells. In the present study, we detected the replication of vesicular stomatitis virus (VSV) and peste des petits ruminants virus (PPRV) in overexpressed and knocked-down Atg13 cells. We found that Atg13 restricted VSV and PPRV replication in cells. After that, we tested the production of type 1 interferons (IFNs). It was found that Atg13 inhibited the virus by activating IFNβ production. Meanwhile, ISGs production was detected by qPCR, including ISG15, ISG56, CXCL10, OASL, MX1, etc. To examine whether the increased transcription of IFN genes result in IFN production in our cell culture system, we collected the medium (supernatant) derived from control and Atg13 transfected cells at 24h post-infection with VSV and PPRV. Consistently, the increased transcription of IFN genes resulted in production of detectable IFN protein, which was sufficient to limit VSV and RRRV replication. These results indicate that Atg13 could activate production of IFN and ISGs to fight against VSV and PPRV. This study is aimed to show the regulatory role of Atg13 during viral infection, and these findings might enrich the understanding the antiviral mechanism of Atg13.

Keywords: nuclear medicine, accelerator produced isotopes, safety, quality assurance, etc

Biography

Xin Cao has been Graduated from Shanghai Institute of Biochemistry and Cell Biology, Shanghai Institutes for Biological Sciences as Ph.D., with the specialties including Biochemistry and Molecular Biology from the Chinese Academy of Sciences. Later on he obtained his post-doctoral training from National Cancer Institute, National Institutes of Health in United States with subjects "T cell development regulated by Zbtb1" and then started working at The Northwest Minzu University in China where he has continued his research. Presently he has been working at the Lanzhou City.

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