



ERS

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Late Breaking Abstract - Erdosteine and its metabolite MET-1 modulate innate immunity and stress oxidative state in SARS-CoV-2 infection

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Background

The decrease of antioxidant Glutathione (GSH) level characterizes several viral infections and different drugs have been proposed to restore or increase GSH levels. Among these, erdosteine (ERD) and its active metabolite MET-1 have shown to have a rationale for treatment of patients affected by respiratory viruses as SARS-CoV-2.

Aims

The main objective of this study was to evaluate effects of ERD and MET-1 on SARS-CoV-2-infected A549 cells with focus on innate immune pathways of type 1 interferon and Inflammasome. Glutathione pathway was analysed to understand the impact on oxidative stress state.

Methods

Viral infection assay on A549 cells was done adding ERD or MET-1 at different doses (100mg/mL and 1000mg/mL) after infection with SARS-CoV-2 (EU, lineage B.1) at concentration of 1,26 TCID₅₀/μL. At 72hpi innate immune response signaling pathway and oxidative stress were analyzed using RT-PCR custom-array with a set of 60 optimized RT-PCR primer assays.

Results

SARS-CoV-2-infected cells treated with 1000mg/mL of both compounds showed overexpression of Interferon stimulated genes and inflammasome components (DDX58, IFNA1, CARD6, CASP1, CASP4 and NLRP4). A decrease in expression level of IL-6 and IL-8 was reported as well as an overexpression of Oxidative Stress and Glutathione pathway (GPX2, GUSB, CAT, PRDX5) was observed.

Conclusions

Our data suggest that ERD can be effectively used in the treatment of viral infections thanks to its effect on improvement of immunity response, explained by activation of type 1 interferon and inflammasome pathways, and thanks to its antioxidant effect.