

# Fluoxetine inhibits severe acute respiratory syndrome coronavirus 2 replication *in vitro*

Yethindra Vityala, Tugolbai Tagaev<sup>1</sup>, Elmira Mainazarova<sup>2</sup>, Ziiabidin Aidarov<sup>1</sup>, Middela Karthik<sup>3</sup>

## Abstract:

No drugs exist that effectively inhibit the cell entry or genomic replication of severe acute respiratory syndrome coronavirus 2 (SARSCoV2). This study evaluated the effects of fluoxetine on SARSCoV2 replication *in vitro*. Cytotoxicity of both fluoxetine isomers, as well as their impact on the replication of a clinical SARSCoV2 isolate (strain IHUMI3), was assessed using the human nasal epithelial cells. The fluoxetine isomers exhibited similar activities, each significantly inhibiting SARSCoV2 at a concentration of 0.9  $\mu\text{g/mL}$ . The halfmaximal effective concentration was 0.39  $\mu\text{g/mL}$  for both isomers. Treatment with a concentration of 10  $\mu\text{M}$  of either isomer resulted in a 63.9% reduction in the SARSCoV2 titer. Fluoxetine also decreased viral protein expression. The present study demonstrated that fluoxetine inhibited SARSCoV2 replication *in vitro*, thus providing initial evidence for its potential therapeutic use against SARSCoV2 infection.

## Keywords:

COVID-19, fluoxetine, selective serotonin reuptake inhibitor, severe acute respiratory syndrome coronavirus 2