

SIMPLE WESTERN WITH JESS UNCOVERS POSSIBLE NEW STRATEGY TO PREVENT AND TREAT COVID-19



JESS REVEALS A LINK BETWEEN ELOVANOIDS AND ACE2 EXPRESSION

As the global death toll from the COVID-19 pandemic approaches 1 million, the scientific community has jumped into high gear to understand and treat SARS-CoV-2 infection. It is understood that SARS-CoV-2 entry into host cells involves the binding of the viral spike protein to the human ACE2 receptor.¹ Thus, ACE2 has become a target of extreme interest in studies to understand and prevent infection.

In a recent App Note, we described how Simple Western, the automated Western blot platform from ProteinSimple, can detect and quantify ACE2 and the associated protease TMPRSS2 in human cells. For this purpose, Simple Western offers many advantages, including automation, fast time to results, and reproducible quantification. In an exciting new preliminary study just released in *Research Square*, researchers at LSU and USC used ProteinSimple's newest Simple Western platform, Jess™, to detect and quantify ACE2 in lung cells to study SARS-CoV-2 infection, and their findings were remarkable.²

Elovanoids are novel class of bioactive chemical messengers that are released on demand when cells are injured or stressed in order to maintain cell integrity.³ Calandria and colleagues discovered that elovanoids attenuate cell binding and entrance of the SARS-CoV-2 receptor-binding domain in human primary alveolar cells in culture.² Using Jess to precisely quantify ACE2 expression, they observed a significant downregulation of ACE2 in alveolar cells in response to exposure to elovanoids ELV-N32 and ELV-N34 (FIGURE 1). Additionally, they found that elovanoids enhance the expression of a set of protective proteins hindering cell surface virus binding and upregulating defensive proteins against lung damage. These findings indicate that elovanoids may help prevent and treat SARS-CoV-2 infection, and it opens the way for future studies to change disease risk and progression of COVID-19 and other pathologies.

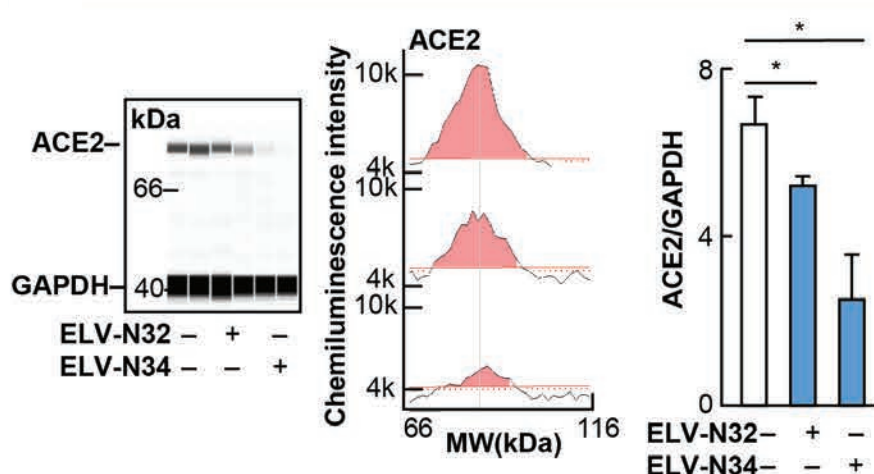


FIGURE 1. ACE2 protein detection and quantification in alveolar cells using Jess, the newest Simple Western platform from ProteinSimple. The left panel depicts lane view of ACE2 at 90 kDa and GAPDH at 40 kDa, which was used as a loading control. The middle panel shows the area below the peak used to quantify ACE2 expression, and the right panel shows the quantitation of ACE2 in N=2 samples of alveolar cells with and without ELV-N32 and ELV-N34. Figure adapted from Calandria et al.²

SIMPLE WESTERN IS AN IDEAL TOOL FOR COVID-19 RESEARCH

Jess's sensitive quantification capability allowed Calandria and colleagues to precisely quantify ACE2 downregulation in response to elovanoid exposure in alveolar cells. Because all steps for immunoassay analysis on Jess are automated following a simple sample preparation, time in the laboratory is kept to a minimum, which is ideal for social distancing measures. And once a run has been completed, [data may even be analyzed remotely without the need to return to the lab](#). Furthermore, Simple Western is an open platform, and any antibody may be used for detection, like ones that target [ACE2](#) and other host proteins and virulence factors. For these reasons, Simple Western continues to be at the cutting edge to advance COVID-19 research and other pressing challenges in human health, including [developing a vaccine to the COVID-19 coronavirus](#).

REFERENCES

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Jess

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