Study reports compound blocks SARS-CoV-2 and protects lung cells

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Research conducted at LSU Health New Orleans Neuroscience Center of Excellence reports that Elovanoids, bioactive chemical messengers made from omega-3 very-long-chain polyunsaturated fatty acids

discovered by the Bazan lab in 2017, may block the virus that causes COVID-19 from entering cells and protect the air cells (alveoli) of the lung. Their findings are published online in *Scientific Reports*.

"Because the compounds are protective against damage in the brain and retina of the eye and the COVID-19 virus clearly damages the lung, the experiment tested if the compounds would also protect the lung," notes Nicolas Bazan, MD, Ph.D., Director of the LSU Health New Orleans Neuroscience Center and senior author of the paper.

The research team tested Elovanoids (ELVs) on infected lung tissue from a 78-year-old man in petri dish cultures. They found that ELVs not only reduced the ability of the SARS-CoV-2 spike protein to bind to receptors and enter cells, but they also triggered the production of protective, anti-inflammatory proteins that counteract lung damage.

The scientists report that ELVs decreased the production of ACE2. ACE2 is a protein on the surface of many cell types. ACE2 receptors act like locks on cells, and the SARS-CoV-2 spike proteins act like keys that open the locks letting the virus enter cells to multiply rapidly. They also demonstrated for the first time that alveolar cells are endowed with pathways for the biosynthesis of ELVs.

"Since SARS-CoV-2 affects nasal mucosa, the GI tract, the eye, and the nervous system, uncovering the protective potential of ELVs expands the scope of our observations beyond the lung," adds Dr. Bazan. "Our results provide a foundation for interventions to modify disease risk, progression, and protection of the lung from COVID-19 or other pathologies (including some types of pneumonia)."

More information: Jorgelina M. Calandria et al, Elovanoids downregulate SARS-CoV-2 cell-entry, canonical mediators and enhance protective signaling in human alveolar cells, *Scientific Reports* (2021).

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