

Inhibition of PDK1 Can Reverse Cell Aging

A study provides insight into the complex mechanism of cellular senescence and presents a potential therapeutic strategy for reducing age-related diseases.

NEW YORK, NEW YORK, UNITED STATES, December 3, 2020

/EINPresswire.com/ -- Recent studies showed that cellular senescence,

previously considered an irreversible

biological phenomenon, may represent a reversible state, but the mechanism for the reversion is not well elucidated. Last month, Research findings by a Korean team provide insight into the complex mechanism of cellular senescence and present a potential therapeutic strategy for reducing age-related diseases associated with the accumulation of senescent cells.

To identify targets the inhibition of which would convert senescent cells into quiescent cells, the researchers constructed a molecular regulatory network model of cellular senescence. From ensemble analysis of network models, they identified 3-phosphoinositide-dependent protein kinase 1 (PDK1) as a promising target for inhibitors to convert the senescent state to the quiescent state. The researchers validated this prediction in experiments with human dermal fibroblasts, which showed that PDK1 inhibition eradicates senescence hallmarks by suppressing both nuclear factor κ B and mTOR signaling through the inactivation of a positive feedback loop composed of PDK1, AKT, IKBKB, and PTEN, resulting in restored skin regeneration capacity. The findings were published in the Proceedings of the National Academy of Sciences.

According to experts at [VulcanChem](#), PDK1 is a master kinase, which is crucial for the activation of AKT/PKB and many other AGC kinases including PKC, S6K, SGK. An important role for PDK1 is in the signaling pathways activated by several growth factors and hormones including insulin signaling. Inhibitors of PDK1 include [BX795](#), [BX912](#), etc.

"Our research opens the door for a new generation that perceives aging as a reversible biological phenomenon," says Professor Kwang-Hyun Cho of the Department of Bio and Brain Engineering at the Korea Advanced Institute of Science and Technology (KAIST), who led the research with colleagues from KAIST and Amorepacific Corporation in Korea. The scientists recommend investigations are next done in organs and organisms to determine the full effect of PDK1 inhibition. Since the gene that codes for PDK1 is overexpressed in some cancers, the scientists



VulcanChem – Global Leading Supplier of Research Chemicals

expect that inhibiting it will have both anti-aging and anti-cancer effects.

“The study showed the potential for reverse the aging process, which has been recognized as an irreversible phenomenon in life,” Professor Cho said. “This research marked the beginning of a new era that can prevent diseases related to aging and prolong life span.”

Valerie Walters

VulcanChem

[email us here](#)

Visit us on social media:

[Twitter](#)

This press release can be viewed online at: <https://www.einpresswire.com/article/531973462>

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information.

© 1995-2021 IPD Group, Inc. All Right Reserved.