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A combination of Lithium and Glycyrrhizic acid has anti-aging effects

Optimal intracellular pH (pHi) provides a necessary environment for the activity of key biochemical processes, including glycolysis, mitochondrial function, and genomic function; it also affects membrane potential, cell growth, and polymerization of the cytoskeleton. The aging process is accompanied by gradual acidification of pHi, affecting these and numerous other intercellular processes. In this study, we investigate the potential role of a combined treatment of lithium and glycyrrhizic acid (a constituent of licorice root) counteracts pHi acidification. We observe the concomitant reversal of many of the generally accepted physiological attributes of the aging process. In cell culture, treatment by the combination of lithium and glycyrrhizic acid caused decreased expression of the senescence marker beta-galactosidase, as well as altered expression of other genes associated with aging and also enhanced mitochondrial respiration in cell cultures. In *C. elegans*, this treatment increased lifespan in a statistically significant manner. Finally, in an observational administration to human volunteers, the combination of lithium and glycyrrhizic acid increases telomere length by several-fold in blood cells. Intriguingly, each of these results requires the combination of specific doses of lithium and glycyrrhizic acid, as treatment with either compound alone, had little to no effect on aging symptoms. Our results provide preliminary data supporting the hypothesis that increasing pHi may reverse age-related physiological processes, with a combination of lithium and glycyrrhizic acid leading to increase in pHi, in parallel with the reduction in biological signs of aging and even increase in the lifespan in a simple organism.

Biography

Pavel Idelevich although trained in internal medicine and pathology, he has largely remained focused on basic cell biology, as it applies to disease states and the aging process. Prior to forming Prescient Pharma his work has to lead to the isolation and identification of rare circulating fetal and tumor cells, currently in development by EarlyCell. He is also responsible for the development and commercialization of several histochemical kits currently used in cancer detection. Originally from former Soviet Georgia, he spent over a decade working in Israel at the Weizmann Institute and in industry.

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