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RESEARCH ARTICLE

ADVANCEMENTS IN MEDICAL TECHNOLOGY AND HUMAN LIFESPAN EXTENSION

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ABSTRACT

The medical industry has seen many breakthroughs in recent years, such as new combination therapies for specific diseases. However, research on anti-aging and related topics remains stagnant. Despite the rise in popularity of beauty products, effective anti-aging medications are still rare. To further advance the medical field, we need to find a solution. Identifying the best path forward is crucial to driving future progress. In this research paper, we suggested that to utilize turtles to possess a gene termed a growth-slowing factor. We believed that these genes have the potential to decelerate aging processes and prolong lifespan.

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INTRODUCTION

Despite numerous medical advancements in recent years, such as novel combination therapies for specific diseases, research concerning anti-aging and related subjects continues to face stagnation. Although beauty products have gained increasing popularity over recent decades, genuine anti-aging pharmaceuticals remain scarce. The only efficacious treatment presently available is Botox, which addresses skin aging and diminishes wrinkles. Other treatments have yet to demonstrate significant effectiveness. Gene editing aimed at anti-aging, along with organ regeneration and replacement, may represent the most promising avenues for attaining lifespan extension.

Literature review: Recent biomedical studies indicate that, despite quick advances in technology and science, the rate of human lifespan extension is decelerating (Hayflick, L. 2000). This suggests future research may prioritize enhancing healthspan—the quality of life during aging—over merely extending lifespan. The rise of integrative methods like digital health tools, multi-omics data (covering genomics, proteomics, and metabolomics), and network pharmacology reflects a move toward a systems biology approach to aging. These multi-modal tactics aim to modulate the complex network of biological pathways governing aging and associated diseases, promoting healthier aging processes. The glycome, which encompasses the complete repertoire of glycoconjugates on lipids and proteins, serves as a crucial biomarker reflecting the functional state of the immune system as well as underlying inflammatory processes (Shkunnikova *et al*., 2023). Rene Gordon Lauc, a renowned researcher from Zagreb, has emphasized that the glycome constitutes a significant factor in the aging process, as alterations in glycosylation patterns occur dynamically with advancing age. These modifications influence the phenomenon of inflammaging – the chronic, low-grade inflammation associated with aging – thereby contributing to the pathogenesis of various age-related diseases (Memarian *et al*., 2023). Furthermore, detailed analysis of the immunoglobulin G (lgG) glycome can yield valuable insights into individual susceptibility to cardiovascular conditions, hypertension, and other metabolic disorder. Such glycomic profiling offers promising avenues for personalized healthcare interventions, enabling early identification of disease risk prior to clinical manifestation. (Natalie F, *et al*., 2023)

METHODOLOGY

This research relies on a scholar review of peer-reviewed studies from databases like PubMed, Scopus, and Frontier, focusing on cohort studies and meta-analyses published between 2000 and 2025. Additionally, this research article will utilize recent medical developments to analyze the emerging frontier in anti-ageing. This will support our innovative

concept approach, which involves developing an idea to potentially extend human lifespan through DRNA editing technology. Our unique Turtle DRNA extraction and editing suggestions could be valuable for applying human gene techniques that benefit humanity.

DISCUSSION

In the biomedical realm, certain species such as turtles possess a specific gene known as a growth-slowing factor, which has been shown to modulate cellular aging processes. These genetic factors have the potential to decelerate senescence and prolong organismal lifespan. Despite substantial advancements in medical science—including the development of novel multimodal therapies targeting complex pathologies—research efforts focused on anti-aging interventions remain relatively stagnant and underfunded. Although cosmetic products claiming anti-aging benefits have proliferated significantly over recent decades, pharmacological agents with proven efficacy in slowing aging are conspicuously scarce. Currently, the only widely accepted minimally invasive procedure with demonstrable anti-aging effects is botulinum toxin injections, primarily used to diminish dermal wrinkles and skin laxity. Other therapeutic modalities have yet to exhibit consistent, statistically significant results. Emerging techniques such as precision generenewment—aimed at rectifying age-related genetic mutations—and regenerative medicine strategies, including organ bioengineering and replacement, hold the most promising potential for significantly extending healthy lifespan in the future.

Advances in medical technology increase lifespan: Anti-aging and lifespan extension are quickly advancing areas within medicine and biotech, focused on postponing physical and mental deterioration for healthier, longer lives. Recent developments emphasize gene therapy, natural substances, epigenetic reprogramming, and lifestyle modifications as promising strategies.A pivotal study demonstrated that elevating levels of the Klotho protein through gene therapy in murine models extended their lifespan by 15–20% and improved muscle strength, bone density, and cognitive function. This secreted variant of Klotho (s-KL) enhances physical and neurological resilience by supporting musculoskeletal health, protecting bone architecture against osteoporosis, stimulating neurogenesis, and augmenting immune activity within the brain. The method employed viral vectors capable of reaching the central nervous system after intravenous administration, presenting a potential approach applicable to humans. Patents have been filed for the utilization of Klotho in longevity therapies. Compounds like curcumin, a bioactive component in turmeric, have demonstrated anti-aging properties by influencing key proteins such as sirtuins, AMPK, NF-κB, and mTOR. Other natural substances, including omega-3 fatty acids, vitamins (E, D, K, and C), coenzyme Q10, and green tea polyphenols, provide antioxidant, anti-inflammatory, and cardiovascular benefits. Together, they help slow physiological decline related to aging and lower the risk of chronic diseases. Preclinical studies at Emory University found that psilocybin's active component, psilocin, increased the lifespan of human skin and lung cells by more than 50%. In aged mice, prolonged dosing led to a 30% higher survival rate and better physical health. Psilocybin decreases oxidative stress, boosts DNA repair, and helps maintain telomere length—all crucial in aging and related diseases—pointing to a new potential therapy for healthy aging. The field of merging biotechnology concentrates on epigenetic reprogramming, which involves the strategic manipulation of gene expression profiles through the application of specific transcription factors, such as the Yamanaka factors (Oct4, Sox2, Klf4, and c-Myc). This approach aims to revert somatic, or differentiated, cells to a pluripotent, embryonic-like state, effectively rejuvenating cellular function and potentially reversing age-related cellular decline. Human induced pluripotent stem cells (iPSCs) serve as a pivotal research platform to elucidate the underlying mechanisms of cellular rejuvenation and to explore the therapeutic potential of epigenetic reprogramming for regenerative medicine. Apramycin, a compound initially classified as an antifungal agent and immunosuppressant, has demonstrated significant lifespan-extending properties in various animal models. These effects are believed to be mediated through the inhibition of the mechanistic target of rapamycin (mTOR) signaling pathway, which plays a central role in cellular growth, proliferation, and survival. By modulating this pathway, apramycin potentially delays multiple cellular and physiological aging processes, including the onset and progression of neoplastic transformations. This mechanism enhances cellular maintenance and survival pathways, thereby contributing to improved tissue homeostasis and possibly extending organismal lifespan. In this research, we suggest that extending human lifespan involves incorporating advanced medical technology into new biological gene extraction methods, combined with healthcare services to lower disease rates and promote longevity.

Suggestion: Here, we proposed an innovative D-RNA editing method, suitable for anti-aging and extending the human lifespan. We aim to develop an innovative and highly precise D-RNA editing methodology designed to combat age-related decline and promote lifespan extension. This approach leverages cutting-edge molecular techniques to induce targeted modifications in RNA sequences, thereby enabling refined regulation of gene expression associated with aging processes. Our strategy represents a significant advancement in the field of regenerative medicine and molecular biology, offering potential therapeutic avenues for age-related diseases and lifespan prolongation.

In addition, this research paper suggested utilizing the turtle as a medium to start a gene transformation, so that we may capture some of the prolonged healthy genes that are in the turtle, and utilize the genes from the turtle, and then we may find out the solution to prolong human life. These innovative methods may help us make great advances in medical technology. Extracting the genes from turtles can further be utilized with editing D-RNA strategies, which in turn can help to increase human lifespan. These developments are opening up new possibilities for health and longevity. Such as Anti-aging and lifespan extension. By utilizing the D-RNA technology to extract D-RNA from the turtle, we may find a solution to reverse the aging process, turning young and prospective. That is, we call it a reverse gene (Turtle DNA) that is (TD-rNA). This research paper suggests utilizing gene editing techniques to fight aging; it may reverse the aging process. These method holds significant promise for advancing anti-aging therapies, enabling organ regeneration, and improving biological sampling techniques. These developments could play a pivotal role in surpassing current limitations on human lifespan, potentially revolutionizing

healthcare and longevity science. Such innovations rely on cutting-edge molecular biology, genetic engineering, and regenerative medicine, emphasizing the need for rigorous research and ethical considerations.

CONCLUSION

In the foreseeable future, advancing research in the fields of gene editing techniques—including our innovative suggestion to utilizing the (TD-rNA) and other genome engineering technologies—holds the potential to revolutionize approaches to extend the life span of the human, reduce the age-related decline, facilitate organ regeneration, and improve biological editing methods. Such developments could be instrumental in overcoming current biological lifespan constraints, thereby significantly extending human longevity and enhancing regenerative medicine capabilities. This research paper hopes to contribute to the world and mankind.

REFERENCES

Hayflick, L. (2000). The Cell Ageing and Life Extension.

Natalie Falshaw, Michael Sagner, Richard C. (2023). The Longevity Med Summit: insights on healthspan from cell to society. Frontier Science.

Memarian, A., Raveendran, R., & Huang, B. (2023). Robust multi-mode probabilistic slow feature analysis with application to fault detection. Journal. Journal of Process Control

Shkunnikova S, Mijakovac A, Sironic L, Hanic M, Lauc G, Kavur MM. *lgGglycans in health and disease: prediction, intervention, prognosis, and therapy.* Biotachnol Adv. 2023;67:108169. Doi: 10.1016/j.biotechadv.2023.108169.

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