

Studying the Features of Some Biochemical Indicators in Centenarians and Their Close Relatives

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Abstract:

In recent decades, the phenomenon of population aging has become a key interdisciplinary issue, spanning medicine, biology, gerontology, and sociology. Increasing life expectancy and the growing proportion of elderly people in society have fueled interest in studying the molecular and physiological mechanisms of aging, as well as the factors that promote longevity. Particular attention is paid to endocrine changes and the state of the antioxidant system, as they are considered potential markers of biological age.

In this study, conducted in the Goychay region of Azerbaijan—a region where longevity has not previously been studied—a gerontobiological study was conducted involving centenarians and their relatives. A comparative analysis of the hormonal profiles of relatives of centenarians and unrelated control subjects was conducted. The impact of age-related changes on antioxidant system parameters and the intensity of lipid peroxidation was also assessed in clinically healthy individuals of various age groups.

It has been established that the concentration of individual sex hormones correlates with the rate of biological aging and can be considered a marker of healthy aging. With age, an increase in lipid peroxidation is observed, accompanied by a decrease in the effectiveness of antioxidant defense, which is consistent with literature data. Hormonal profiles and oxidative homeostasis indicators can serve as informative biomarkers for assessing the rate of aging and predicting lifespan. The obtained results confirm the importance of endocrine and antioxidant factors in the mechanisms of aging.

Keywords:

Aging biomarkers, centenarians, aging, sex hormones, oxidative stress, antioxidant defense.