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CHORIONIC GONADOTROPINE: STRUCTURAL HETEROGENEITY, METABOLIC PATHWAY, FUNCTIONS, OBTAINING AND POSSIBILITIES OF CLINICAL APPLICATION

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Human chorionic gonadotropin (hCG) is one of the key hormones needed for pregnancy sustaining. At the same time, it performs many other biological functions, which is due to the effect on the immune cells’ activity, the ability to bind to at least three types of receptors and activate various signaling cascades. Several structural forms of hCG and their combinations have been identified. This structural heterogeneity is the cause of variations not only in the degree and direction of the hormone functional activity, but in the mechanisms of its action, the degree of binding to other molecules and the conditions of dissociation as well.

**Aim.** To review the current understanding of the role and mechanisms of the biological activity of hCG and its isoforms, as well as the identification of physicochemical factors that affect the completeness of hCG release from biological raw materials and the stability of the isolated drug during further storage.

**Methods.** A computerized literature search was performed using three electronic databases from 1980 to 2020. Descriptive and comparative analyzes were performed for discovered studies in molecular biology, biochemistry and clinical practice.

**Results.** A detailed biochemical and physiological analysis of hCG and its related molecules are provided in this review. The features of measuring its content in tissues, isolation and purification methods, difficulties associated with low-temperature storage, as well as the spectrum of hCG preparations clinical use of and their proposed new therapeutic possibilities are considered.

**Conclusions.** HCG is characterized by a wide range of versatile functions, and its field of application in laboratory diagnostics and clinical practice is still expanding. At the same time, to elucidate the mechanisms of its multiple therapeutic effects, including antitumor action, as well as the mechanisms of dissociation under conditions of low-temperature storage, which can solve the problem of maintaining the stability of this hormone, it remains relevant.

**Key words:** chorionic gonadotropin, cord blood, α and β subunits of hCG, hCG storage.
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