

## SUMMARY

**Andrusyshyna I. M. The hygienic evaluation of the impact of metals on the endocrine system as low-dose anthropogenic factors.** — The manuscript.

Thesis for Doctor of Biological Science degree in Specialization 14.02.01 — Hygiene and Occupational Pathology. — Governmental Institution "Yu.I. Kundiiev Institute for Occupational Health of the National Academy of Medical Sciences of Ukraine", Kiev 2020.

The thesis is devoted to the topical issue in the area of occupational medicine concerning the complex hygienic and environmental assessment of specific characteristics of metal impact on the endocrine system in workers and general population, examination of adaptation processes at molecular, cellular and system levels as well as the justification of optimal metal levels (Ag, Al, Cr, Mn) in biological media, and the improvement of methodological approaches to pathogenesis, diagnostics and assessment of risk.

The obtained results allowed to justify metal concentrations in biological media for Ag, Al, Mn and Cr exposure which met the acceptable level of the health risk according to criteria of endocrine functional changes. It was established that the content of microelements in biological media examined in a number of cases corresponded to their minimum physiological levels (Pb, Zn, Cd, Mg, Se), optimal levels (Mn, Fe, Cu, Ni, Ca) and maximum physiological levels (As and Al). Optimal blood levels are 0.2 mg/l (Al), 0.02 mg/l (Ag), 0.02 mg/l (Cr) and 0.038 mg/l (Mn); and when they are exceeded, the surrounding environment is considered to be an increased risk environment in the context of exposition to these metals.

The conducted research allowed to expand the methodological approaches to complex hygienic and environmental assessment of metal effect on the development of endocrine pathology; the methodological approaches were expanded concerning methods and means for diagnostics and prognosis of disturbance in microelemental status, evaluation of endocrine capacity in general population and workers using the set of invasive and non-invasive analytical procedures (multi-element analysis of hair, nails, blood serum, whole blood, urine, saliva); optimal levels of these metals in human biological media were justified and evaluation of environment-associated risk of endocrine disorders in man was performed; the method for biological monitoring of metals was introduced into clinical and sanitary and hygienic practice.

Thus, in the thesis, the topical scientific research issue was addressed: the consistent patterns in optimal metal levels in human biological media were determined; the primary markers of exposure and hygienic determinants of healthy human endocrine system in the context of multi-factorial anthropogenic environmental pollution were established; the differential approach to early clinical diagnostics of endocrine disorders in workers taking into account territorial, sex- and age-related, physiological and pathological patient profile, category and severity of microelemental status disturbance was justified.

**Key words:** metals, hygienic evaluation of working, biological media, reference values, adaptation, endocrine system, occupational risk.