Prof. Dr. Duško Vejnović,
Full Professor at the University of Banja Luka,
Editor-in-Chief of the scientific journals *Defendology* and *Sociological Discourse*.

President of European Defendology Centar

ADVANCED PHARMACOLOGICAL RESEARCH AS A CHALLENGE TO INTERNATIONAL SECURITY

Modern advancements in pharmacological research bring undeniable benefits to medicine, extending life expectancy, improving quality of life, and enabling revolutionary solutions for diseases once considered incurable. However, alongside this progress come significant challenges to international security, including the potential misuse of pharmaceutical innovations, the development of biological weapons, ethical dilemmas in research, pharmacological imperialism, corporate power issues, regulation of new substances, and threats to the global healthcare system. Modern pharmacology has become a crucial factor in international relations, where dominance in bioengineering and the pharmaceutical industry can significantly shape geopolitical currents, while powerful corporations and states use pharmacological innovations as tools for achieving hegemony and controlling populations.

First, one of the most serious security concerns is the potential misuse of pharmacological research for biological warfare purposes. Modern biotechnology enables the synthesis of viruses and bacteria that are more resistant to drugs, while advances in genetic engineering open the door to the creation of specifically programmed biological agents that can act selectively based on genetic code, ethnic affiliation, or the immune characteristics of a population. Despite international conventions such as the Biological Weapons Convention (BWC), there are serious indications that many countries are conducting covert research programs in this field under the guise of biomedical experiments. Additionally, in the era of artificial intelligence and advanced algorithms, it is possible to use pharmacological data to model pathogens that could trigger targeted pandemics, posing a serious challenge to global stability and international security.

Second, pharmacological research raises ethical dilemmas regarding experiments on humans and animals. There is significant concern over unethical medical trials conducted in underdeveloped and politically unstable countries, where pharmaceutical corporations carry out drug testing without adequate oversight and informed consent from patients. History records numerous instances of experiments where impoverished populations were used as test subjects, sparking international ethical debates and necessitating stricter regulation. Additionally, the rapid development of neuropharmacology introduces the possibility of manipulating human consciousness through substances that can modulate mood, memory, perception, and behavior, creating opportunities for potential misuse in military and political operations. In this context, discussions increasingly focus on so-called "neuro-weapons," pharmacological agents that could weaken the will and resistance of targeted populations, making them more susceptible to the influence of hegemonic powers.

Third, the phenomenon of pharmacological imperialism represents a new form of neocolonialism, where developed countries use their dominance in the pharmaceutical industry to control the healthcare systems of weaker states. A monopoly on essential drug production allows large pharmaceutical companies to dictate prices and conditions under which less developed countries can access critical therapies. This form of economic domination was particularly evident during the COVID-19 pandemic when wealthier nations secured vast quantities of vaccines while poorer countries were forced to wait for donations or enter unfavorable agreements with pharmaceutical giants. Furthermore, there is concern that certain pharmaceutical companies deliberately create market dependence on their products, fostering economic models that encourage prolonged drug use rather than permanent solutions to health problems.

Fourth, the problem of global regulation of pharmaceutical innovations further complicates international security. New drugs and substances are being developed faster than legislation can keep up, leading to phenomena such as the illegal trade of experimental substances, opioid and synthetic drug abuse, and the unlawful sale of biological agents via darknet networks. Additionally, many pharmacological innovations are available through biotech startups operating outside traditional regulatory frameworks, creating space for the non-transparent use of powerful substances. In this context, international coordination becomes crucial, but political interests and rivalry between states often hinder effective cooperation in regulating pharmacological research.

Fifth, pharmacological advancements can have serious consequences for radicalization and security threats beyond traditional geopolitics. The increasing availability of substances that enhance cognitive abilities raises questions about their potential use for militarizing populations or extremist groups. If pharmacological stimulants develop the ability to prolong wakefulness, increase aggression, or reduce empathy, serious concerns arise about how such substances could impact future conflicts and intelligence-security operations. Moreover, the development of synthetic drugs with the potential for mass psychological influence could become a tool for destabilizing entire regions, as is already seen with the synthetic opioid crisis, such as fentanyl, which causes health crises and economic repercussions worldwide.

In conclusion, the advancement of pharmacological research represents a double-edged sword: on one hand, it offers revolutionary possibilities in medicine and healthcare, but on the other hand, it presents serious challenges to international security. The potential for biological warfare, ethical abuses, pharmacological imperialism, inadequate regulation, and the militarization of pharmaceutical innovations require urgent attention from the international community. Stronger global cooperation is needed in regulating biomedical research, developing international mechanisms to monitor the pharmaceutical industry, and ensuring ethical approaches to research to prevent misuse. Otherwise, the world may face a new form of insecurity, where pharmacology becomes not only a source of health and progress but also a key factor in international crises, conflicts, and geopolitical strategies.