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ETHICAL CONSIDERATIONS ON THE CONNECTION BETWEEN BIOLOGICAL WEAPONS AND COVID-19 PANDEMIC

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ABSTRACT. After the Covid-19 pandemic was officially declared by the United Nations Organization on 11 March 2020, this has been associated with the state of war and biological weapons. Could the Covid-19 pandemic, which caused hundreds of thousands of deaths worldwide, be considered a result of experiments? A simple search on search engines for the terms "biological weapons" and "Covid-19" retrieves approximately 10,200,000 results in 0.69 seconds, allowing to conclude that the two ideas and concepts have been frequently associated lately. During the periods of restrictions imposed on the population by authorities (emergency ordinances, state of emergency, lockdown measures, etc.), various apocalyptic scenarios have been advanced and debated, mass media and social networks being an unprecedented arena for raising topics and taking stands. The population has been assaulted with extreme information, and words such as war, weapons, insecurity, and control have been frequently expressed. This paper aims to highlight the ethical issues regarding the connection between the Covid-19 pandemic and biological weapons.

Keywords: *biological weapons, Covid-19, ethical considerations*

REZUMAT. Consideraţii etice cu privire la corelaţia dintre armele biologice şi pandemia Covid-19. După ce pandemia Covid-19 a fost declarată oficial de către Organizaţia Naţiunilor Unite, în 11 martie 2020, s-au făcut asocieri cu starea de război şi cu armele biologice. Ar putea fi considerată pandemia Covid-19, care a provocat sute de mii de decese în întreaga lume, drept rezultatul unor experimente? La o simplă explorare pe motoarele de căutare a termenilor „biological weapons" şi „Covid-19", motorul de căutare ne indică un număr de aproximativ 10.200.000 de rezultate în 0,69 de secunde, concluzionându-se că asocierea dintre cele două idei şi concepte s-a făcut de numeroase ori în ultima

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vreme. În timpul perioadelor de restricții impuse populației de către autorități (ordonanțe de urgență, stare de urgență, măsuri de carantină etc.), s-au avansat și s-au dezbătut diferite scenarii apocaliptice, mass-media și rețelele de socializare fiind arena care a provocat teme și luări de poziție fără precedent, populația fiind asaltată cu informații extreme, enunțându-se deseori cuvinte precum război, arme, nesiguranță, control etc. Obiectivul acestui articol a fost să evidențieze considerațiile etice cu privire la corelația dintre pandemia Covid-19 și armele biologice.

Cuvinte cheie: arme biologice, Covid-19, considerații etice

Calling things by the wrong name adds to the affliction of the world.
(Albert Camus, *The Plague*, 1947)

Introduction

After the Covid-19 pandemic was officially declared by the United Nations Organization on 11 March 2020, this has been associated with the state of war and biological weapons. Could the Covid-19 pandemic, which caused hundreds of thousands of deaths worldwide, be considered a result of experiments? The conspiracy theories massively disseminated by social media regarding the presence of a biological agent of military origin have led scientists to publish the genome of the causal agent, SARS-CoV-2, concluding that this novel coronavirus has its origin in the wild fauna[3]. The Wuhan P4 laboratory is not a military laboratory, SARS-CoV-2 is not a biological weapon, and China is a state that is part of the Convention on the Prohibition of Bacteriological Weapons and their Destruction[4]. This paper aims to highlight the ethical issues regarding the connection between the Covid-19 pandemic and biological weapons.

Before arguing the coordinates and characteristics of a biological war and the extent to which the Covid-19 pandemic resembles such a situation, we have to make some terminological clarifications.

[3] Kristian G. Andersen, Andrew Rambaut, W. Ian Lipkin, Edward C. Holmes, Robert F. Garry, "The proximal origin of SARS-CoV-2". *Nature Medicine*, 2020; DOI: 10.1038/s41591-020-0820-9.

[4] Nie JB. "In the Shadow of Biological Warfare: Conspiracy Theories on the Origins of COVID-19 and Enhancing Global Governance of Biosafety as a Matter of Urgency". *J Bioeth Inq.,* 2020; 17(4):567-574. DOI:10.1007/s11673-020-10025-8.

General considerations on the topic

Biological weapons consist of microorganisms (bacteria or viruses) or infectious substances derived from these organisms. They are weapons of mass destruction that propagate living organisms or infectious germs with the aim of causing disease or death of human beings, animals or plants[5]. The danger posed by these weapons is explained by the fact that germs are alive and can multiply, propagate and infect the population. Biological agents can mainly take the form of bacteria, viruses or toxins[6].

The term "virus" comes from Latin and means "poison". The infectious agent of which it consists was only identified in 1938, with the advent of the electron microscope, developed after World War II. This is what Pasteur called in 1885 the "anger virus"[7], to describe clinical symptoms and not its agent. When it is not active, the virus takes an inert form, termed virion, which has no metabolism and no capacity of reproduction or autonomous activity. A virion has neither cytoplasm nor nucleus, and presents a nucleic acid with proteins in a defined and constant structure. A virion contains one type of nucleic acid: DNA or RNA. It is capable of dividing itself only by using the cell machinery. It reproduces starting from its genetic material: DNA or RNA, and in the latter case, a reverse transcriptase will allow the transformation of RNA into DNA which can fit into the genome of the cell. The virus can then remain dormant or will divert the cell functioning to its benefit and will replicate. By diverting the protein mechanics of the cell to its benefit, there will be a production of virions which will cause an inflammatory reaction on the part of the living organism.

Coronaviruses (commonly known as CoV), RNA viruses with an extremely long single strand (several thousand nucleotides), belong to the subfamily of Coronavirinae within the Coronaviridae family[8]. The name Coronavirus, which means "crown virus", is due to the appearance of virions which, under the

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5 Bernard Massoubre, „Les défis de l'éthique face au bioterrorisme", available online at: www.Bioethique.com; https://bioethique.com/index.php/medecinedurgenceetdecatastrophe/bioterrorisme/152-les-defis-de-l-ethique-face-au-bioterrorisme, last accessed 12.06.2020.

6 Ministère de l'Europe et des Affaires Externes, „Lutte contre les armes biologiques", available online at: https://www.diplomatie.gouv.fr/fr/politique-etrangere-de-la-france/securite-desarmement-et-non-proliferation/desarmement-et-non-proliferation/lutte-contre-les-armes-biologiques/

7 Christian Arthur, „Virus, coronavirus, Homme, faune sauvage et Chiroptères : quelles (premières) leçons tirer de la pandémie sur notre relation à la nature ?". Mammifères sauvages n°79 - supplément - avril 2020. Available online at : https://www.sfepm.org/sites/default/files/inline-files/SFEPM_Virus_FauneSauvage_21-05-2020_0.pdf, last accessed 12.06.2020.

8 *Ibidem.*

electron microscope, appear as balls with a fringe of large protuberances that surround the envelope, taking the form of a solar crown.

Because all biological processes depend on chemical or psychochemical reactions, the distinction between chemical weapons and biological weapons can become blurred[9]. Thus, bacterial toxins (staphylococci, cholera, botulism) can be used independently of the organism that produces them and become "simple chemical agents" that can be synthesized in the laboratory – by classical or genetic methods, and can be employed on a wide scale. Any microorganism could be used as a biological weapon: viruses (yellow fever, encephalitis, viruses from tropical regions, flu, smallpox), rickettsiae (epidemic typhus), bacteria (plague, carbon due to bacillus anthracis, typhoid fever), Lyme disease caused by a Borrelia species, etc. These agents induce fever, nausea, gastrointestinal disorders, which may lead to death. It is not always necessary to kill one's enemies, disease can make them incapable of fighting or working, which is enough for the economy of a country, a continent or the world to be destabilized. Population groups can be the victims of biological weapons or weapons of mass destruction, similarly to chemical or nuclear weapons.

History of pandemics

Since the Antiquity, diseases have decimated entire populations[10] in a short period of months, spreading terror among the inhabitants facing an unknown evil. As a globalized epidemic, a pandemic is characterized by rapid propagation and a high mortality rate. Pandemics have made millions of victims over time.

The first pandemic known in history is *the Plague of Athens* (430-426 BC), which was probably typhoid fever[11]. Described by the historian Thucydides, who himself was affected by the disease, it manifested by high fever, diarrhea, redness and seizures. Coming from Ethiopia, it extended to Egypt and Libya, then to Athens during the Peloponnesian War. It was estimated that a quarter of the city's population, 200,000 inhabitants, died during this epidemic, which marked the beginning of the decline of Athens.

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9 Maurice Errera, „Armes Biologiques", In: *Nouvelle Encyclopédie de Bioéthique*, De Boeck Université, Bruxelles, 2001, pp. 67-70.

10 Céline Deluzarche, „Les grandes pandémies qui ont marqué l'histoire", In: Futura Science, available online: https://www.futura-sciences.com/sciences/questions-reponses/histoire-grandes-pandemies-ont-marque-histoire-13440/, last acccessed on 30.04.2021.

11 *Ibidem*.

The Antonine Plague (165-166 AD) was, in fact, the smallpox[12]. Its name is derived from the dynasty of Antonins; emperor Marcus Aurelius, who belonged to this dynasty, reigned over the Roman Empire at that time. The pandemic began at the end of the year 165 in Mesopotamia, during the war against the Parthians, and reached Rome in less than a year. According to estimates, this disease caused 10 million deaths between the years 166 and 189, considerably diminishing the Roman population. Smallpox, caused by a virus and characterized by reddish scabs, diarrhea and vomiting, was declared eradicated in 1980.

The black plague epidemic (1347-1352) caused between 25 and 40 million deaths in five years, a quarter of Europe's population[13]. After having raged in China, the black plague pandemic arrived in 1346 in Central Asia, among Mongolian troops besieging the port of Caffa on the Black Sea, held by Genoese merchants[14]. The disease manifested by horrible buboes, then spread to North Africa, then to Italy and France, where it arrived through the port of Marseille via Genoese ships.

In the 16th century, the conquistadors contaminated with smallpox the Mexican populations, causing the death of two million persons. In the next century, the British triggered a smallpox epidemic by sending contaminated blankets to the Indian population in America[15].

The Spanish flu (1918-1919) was caused by an extremely virulent H1N1 influenza A virus. In fact, the Spanish flu originated in Asia[16]. It reached the United States, then crossed the Atlantic, being brought by the American soldiers who came to help France in the war. It is called „Spanish flu" because this country, which was not under the war censorship, was the first to announce the disease. When it came to an end, in April 1919, its consequences were frightful. Between 20 and 30 million people died in Europe and there were up to 50 million deaths worldwide. It is estimated that a quarter of the world's population was infected with this disease.

Cholera (1926-1932) persisting for centuries in India, spread to Russia in 1930, then throughout Europe[17]. It manifested by diarrhea and vomiting, causing rapid dehydration, sometimes leading to death within a few hours. This epidemic caused the death of hundreds of thousands of people worldwide.

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12 *Ibidem.*
13 Maurice Errera, *op. cit.,* p. 67.
14 Céline Deluzarche, *op. cit.*
15 Maurice Errera, *op. cit.,* p. 67.
16 Céline Deluzarche, *op. cit.*
17 *Ibidem.*

Between 1940 and 1945, the Japanese experimented on human beings (Chinese and Russians) the germs of tetanus and carbon, under abdominal conditions[18].

The Asian flu (1956-1957) caused by the H2N2 virus was considered the second lethal flu pandemic after the pandemic of 1918. It caused 2 to 3 million deaths globally. The virus underwent mutations a few years later - H3N2, which triggered a new pandemic in 1968-1969, called the "Hong-Kong flu"[19]. This flu marked the beginning of anti-flu vaccinations.

In 1981, the United States were accused by the USSR of using toxic agents in the form of "yellow rain", which induced skin irritation, headaches, internal bleeding to refugees[20]. The skepticism of American scientists demonstrated that there was a natural explanation to this (swarms of bees that empty their digestive tract simultaneously, leaving yellow traces on the ground); the presence of toxins has never been confirmed. These allegations led to the maintenance of mistrust and cold war for years.

International legal frameworks on the matter

The Declaration of Brussels (1874)[21] and The Hague Conventions (1899 and 1907)[22] banned the use of poisons, the last two recommending compliance with the habits established by civilized nations; they limit the choice of means allowed for weakening the enemy and forbid the bombing of defenseless cities.

The Geneva Convention (1925)[23] "bans the use of asphyxiating, toxic or similar gases, as well as bacteriological means". The protocol of this convention does not refer to banning chemical and biological weapons, but imposes the interdiction to use them during war.

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18 Maurice Errera, *op. cit.,* p. 67.

19 Céline Deluzarche, *op. cit*.

20 Maurice Errera, *op. cit.,* p. 68.

21 *Project of an International Declaration concerning the Laws and Customs of War*, Brussels, 27 August 1874. Available online: https://ihl-databases.icrc.org/ihl/INTRO/135, last accessed 12.05.2020.

22 *The International Hague Conferences of 1899 and 1907*, available online at: https://ehne.fr/en/encyclopedia/themes/europe-europeans-and-world/europe-and-legal-regulation-international-relations/international-hague-conferences-1899-and-1907, last accessed 12.05.2020.

23 *Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare*, Geneva, 17 June 1925, available online at: https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/INTRO/280, last accessed at 12.05.2020.

The Convention on the Prohibition of Bacteriological Weapons and their Destruction (1972)[24] is the main legal tool for fighting biological proliferation. Through its adoption, the convention created the legal foundations for banning the use of biological weapons.

The convention was negotiated in the context of Cold War on the initiative of the United States, United Kingdom and USSR (depository states), which renounced by common agreement the development of weapons of mass destruction and undertook to destroy biological weapons, except for humanitarian ones[25]. However, unlike the 1993 Chemical Weapons Convention, the 1972 Convention is not a control body.

The states parties of the Convention, which was adopted in 1972 and entered in force in 1975, undertake to never, in any circumstance, design, manufacture, store, purchase or transfer microbial or other biological agents and toxins that are not intended for prevention, protection or other peaceful purposes, such as weapons, equipment or vectors specifically designed for the use of agents or toxins for hostile purposes or in armed conflicts. They commit to destroy or convert for peaceful purposes all agents, toxins, weapons, equipment and vectors, this destruction or conversion requiring precautionary measures for the protection of the population and the environment. However, the agreement authorizes research on biodefense means (vaccines, protective equipment) and the production and storage of biological agents required for peaceful purposes. In the name of the imperative to be equipped against a natural epidemic or a bacteriological attack, the States are free to cultivate and manipulate pathogenic strains, to use new genetic manipulation techniques (in vitro fabrication of DNA fragments). Like in the case of chemical and nuclear substances, a structural constraint resides in the dual use of the materials concerned: bacteria or viruses cultured for prophylactic purposes which can also serve as ingredients for an "aerosol bomb"[26].

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[24] *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction*. Opened for Signature at London, Moscow and Washington. 10 April 1972, available online at: https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/INTRO/450, last accessed at 12.05.2020.

[25] Korn Henri, Berche Patrick, Binder Patrice, « Les conventions internationales contre la prolifération des armes biologiques et leurs limites », In: *Les menaces biologiques. Biosécurité et responsabilité des scientifiques*, Korn Henri, Berche Patrick, Binder Patrice (eds.). Paris cedex 14, Presses Universitaires de France, « Hors collection », 2008, p. 57-66. Available online at: https://www.cairn.info/les-menaces-biologiques--9782130571599-page-57.htm, last accessed at 12.05.2020.

[26] Abdelwahab Biad, *La Convention sur l'interdiction des armes bactériologiques (biologiques) ou à toxines revisitée à l'ombre du Covid-19*, available online at: https://www.afri-ct.org/2020/thucyblog-n-56-la-convention-sur-linterdiction-des-armes-bacteriologiques-biologiques-ou-a-toxines-revisitee-a-lombre-du-covid-19/, last accessed 31.07.2020.

The 1972 Convention defines neither bacteriological weapons nor the militarizable biological agents or toxins in their ingredients. These are simply identified as "microbial or other biological agents, or toxins whatever their origin or method of production"[27].

Ethical considerations on the association between the Covid-19 pandemic and biological weapons

Even if evidence has been published which contradicts the fact that the Covid-19 pandemic was caused deliberately, biological weapons remain a serious concern regarding the future of mankind. These could be easily produced and there might be laboratories equipped for their industrial manufacture. They could also be used as aerosols and dispersed by airplanes, in cities, by spies or terrorists. The high interest in biological weapons is the result of the development of genetics, which leads to imagining huge possibilities in this matter[28].

Biological weapons have some shortcomings, such as difficulties in controlling their dissemination, which may depend on difficult to predict meteorological factors, including changes in the wind orientation and contamination risks. Two important aspects related to biological and chemical weapons raise increasing concerns in certain states, particularly in the United States: terrorism and the development of non-lethal weapons (NLW)[29].

Terrorism is expressed as a spectacular and mediatic act of protest against a situation deemed to be unfair or morally unacceptable (fanaticism). Terrorists might use slow acting biochemical products or biological agents. This scenario is not very credible, because the production and efficient dispersion of large amounts of carbon or salmonella bacilli, for example, or certain neurotoxic agents are technically difficult to perform. Experts rather fear attacks against individuals or localized actions.

NLW are part of American armament programs. They are aimed at overcoming the enemy's force equipped with lethal weapons by non-lethal means, in order to disperse the adversaries' human or material forces to the maximum. These weapons are theoretically intended to fill the "void" between diplomatic action and classical military action. Using modern technology, many scenarios can be imagined by which bacteriological, chemical or physical agents can be dispersed. There are different agents capable of changing the efficacy of fuels or explosives, resistance to metals. Psychological or physical aggression of

[27] Maurice Errera, *op. cit.,* p. 68.
[28] *Ibidem*.
[29] *Ibidem.*

persons can be caused by various types of electromagnetic waves (lasers). We can also imagine using genetics to make disappear ethnic groups whose genes contain specific DNA sequences or for crop destruction leading to famine. NLW are also used to maintain public order, for example tear gas[30].

Regarding the Covid-19 pandemic, the decisions of authorities[31] have been contested from the first days, in most countries of the world[32]. The most serious ethical issue derives from the massive dissemination of fake news and contradictory information which has led to the population's loss of confidence in science and in the representatives of the scientific and medical world. From an ethical point of view, this mistrust is detrimental to the scientific community in terms of time, energy and resources wasted by researchers[33]. The public's loss of confidence in scientists leads to the loss of financial support for research, with huge consequences for the population.

Conclusion

The Covid-19 pandemic caused by the SARS-CoV-2 virus highlighted the devastating effects of a pandemic on public health, economy, as well as national and international security. A lot of speculations and unverified information have been published and disseminated on a wide scale, leading to the fear and mistrust of the population in the scientific world and authorities. Despite the periodic warnings of the World Health Organization, starting with 2015, about the outbreak of a pandemic caused by an unknown pathogen ("X disease") such as Ebola or SARS, the pandemic demonstrated the unpreparedness of all states[34]. The population proved to be completely unprepared, which led to inadequate behaviors in response to the measures taken: mistrust, suspicion, fear, isolation, etc.

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30 *Ibidem.*

31 Emeline Han, Melisa Mei Jin Tan, Eva Turk, Devi Sridhar, Gabriel M Leung, Kenji Shibuya, Nima Asgari, Juhwan Oh, Alberto L García-Basteiro, Johanna Hanefeld, Alex R Cook, Li Yang Hsu, Yik Ying Teo, David Heymann, Helen Clark, Martin McKee, Helena Legido-Quigley, „Lessons learnt from easing COVID-19 restrictions: an analysis of countries and regions in Asia Pacific and Europe". In: *The Lancet*, Volume 396, Issue 10261, 2020, 1525-1534.

32 Kenneth Roth, „How Authoritarians Are Exploiting the COVID-19 Crisis to Grab Power" In: *The New York Review of Books*, April 3, 2020, Available online at: https://www.hrw.org/news/2020/04/03/how-authoritarians-are-exploiting-covid-19-crisis-grab-power, last accessed 16.05.2020.

33 Maria Aluaș, Ioana Roxana Bordea, „Integritatea în cercetare – dimensiunea integrală a excelenței academice", in vol: *Sănătatea, Medicina și Bioetica în Societatea contemporană: studii inter și pluridisciplinare,* Centrul Editorial-Poligrafic Print Caro, Chișinău, 2019, pp. 189-194.

34 Abdelwahab Biad, *op. cit*.

Despite the speculations, so far no use of a biological weapon has been demonstrated, even though there were some accusations and suspicions that the United States might have used biological weapons in Korea (1951) and Bolivia (1987)[35]. It is extremely difficult to ascertain the voluntary dissemination of biological agents, because these could be very close to the derivatives of the existing living organisms.

This article aimed to present a historical context of pandemics, the association of some of these with biological weapons, the international legal framework in this matter, and some ethical considerations resulting from the association between biological weapons and the Covid-19 pandemic.

[35] Maurice Errera, *op. cit.* p.67.