



The White Paper on  
**Biological  
Warfare**  
and the Immune System.

*Can You Prepare?*

Are there safe, non-toxic approaches?

For educational purposes only

## INTRODUCTION

Biological warfare (BW) is the intentional use of living microorganisms or their toxic byproducts to cause death, disability, or damage to humans, water supplies, animals or crops(1). From the earliest of times, humanity has been constantly fighting a battle against deadly microorganisms. We have been able to survive these battles against these microorganisms through the development of immunities, modern sanitation, nutrition and advances in science.

The use of microorganisms as biological warfare agents is simply an scientific adaptation of the naturally occurring microorganisms that have been shown to attack and create havoc upon our immune system. These agents intern may develop into disease conditions, exhibiting unique signs of their infection, which may allow for their identification. Small pox is a prime example. In some cases however, these agents have been genetically modified to increase their lethal effect(2). In January 1998, Lt. General Patrick Huges testified that biological weapons have a *“high probability of being used over the next two decades”*(3).

Chemical warfare (CW) agents are much easier then biological warfare agents for governments and/or terrorist to obtain or manufacture, however, massive quantities disseminated over large areas are required to inflict widespread harm(4). This makes them ineffective in cost, manufacturing and transportation. Biological warfare agents appear to be the preferred weapon of choice for terrorist and rouge governments due to cost, simplicity of production, distribution and transportation (5),(18). Further, BW agents are *“hundreds to thousands of times more lethal per unit then most chemical warfare agents”* (6).

## TECHNOLOGY TO PRODUCE BIOLOGICAL WARFARE AGENTS

The production of BW agents can be accomplished at any modern pharmaceutical facility *“as easily as vaccines and antibiotics”* (7). Some have even suggested simpler methods to produce BW agents could be employed, literally a “kitchen sink” brew right in a home(8). It is far simpler to cultivate a living organism and utilized it as a whole then it is to recover their toxic byproducts as BW agents. The technical procedures and equipment necessary for the recovery of the toxic byproducts of living organisms is simply beyond the ability of most small countries, or groups (9).

## HISTORY OF BIOLOGICAL WARFARE

The use of bacteriological agents in armed conflict can be dated back to the 5th century B.C., when Greco-Roman’s contaminated water sources with animal carcasses. In 1346, at Kaffa (now Feodosia) the bodies of Tartar soldiers who succumbed to the plague were thrown over the walls of the besieged city. It is hypothesized by some medical historians that this action resulted in the infamous pandemic that spread over the entire continent of Europe from Genoa, via the Mediterranean ports. In 1710, during the war between Russia and Sweden, Russian troops are said to have used the cadavers of plague victims to provoke an epidemic with the enemy. In 1767 the English provided Indians loyal to the French with blankets infected with smallpox virus.

During the 20th century, in World War I, there is evidence that German agents inoculated horses and cattle with glanders disease in the United States before they were shipped to France. In 1937, 40 miles south of Harbin, Manchuria, a laboratory under Japanese control started conducting research on BW agents, this lab is known as the infamous *“Unit 731.”* These studies continued until 1945 when General

Ishii ordered the labs of Unit 731 burned to the ground. It was reported that slightly less than 1,000 human autopsies had been performed at Unit 731, and that most of these were performed on humans exposed to aerosols of anthrax. In 1940, in China and Manchuria, an epidemic of bubonic plague followed after the over flights by Japanese aircraft. Infected fleas were dropped together with grain, which attracted the local rat population; in turn, the rats served as carriers for the infected fleas to the human population. In 1945, this BW program had stockpiled 400 kg of anthrax to be used in a specially designed fragmentation bomb.

In late April, 1979, the city of Sverdlovsk, USSR, experienced a loud explosion that was identified as originating from Military Compound 19. Several days later, residents downwind from this compound developed high fever and difficult breathing. Over the next several days, more cases were reported and fatalities rose sharply to around 40. Autopsies revealed severe pulmonary edema in addition to symptoms of serious toxemia. Local doctors announced an outbreak of pulmonary anthrax. In 1991-1992 Presumptive evidence acquired by United Nations BW Inspection Team indicates that Iraq could have been in the early stages of developing an offensive BW capability(10).

Presently, as many as ten countries possess offensive biological weapons programs, including China, Iran, Iraq, Libya, North Korea, Russia and Syria(11). With the breakup of the former Soviet Union biological weapons knowledge has been disseminated throughout the world, former Russian experts have been selling their service to the highest bidder. Ken Alibek, former 1<sup>st</sup> Deputy Chief of Research and Production for the Soviet biological weapons program, in an interview, voiced his concern about the loss of control over these experts, stating *“They are everywhere today.... we have lost control of them”*(12). It has recently been reported the Osama bin Laden has acquired Biological warfare agents through the Russian Mafia (13).

## **HOW BIOLOGICAL WARFARE AGENTS DAMAGE OR KILL**

A majority of biological warfare agents are designed to destroy the immune system and/or wreak havoc upon the body. The disease condition that manifest itself is dependent upon the BW agent is use, for example; Anthrax type BW agents may appear at first as high fever and difficulty in breathing, culminating in bleeding resulting in death, while Botulism may show itself first with nausea and diarrhea culminating with respiratory paralysis and blurred vision. It is not the Anthrax bacteria that kills. It is the toxins that are released into body when the bacteria hatch from the spores. The bacteria produce toxins that overcome the victims system(47,48), which intern causes death. **The young, the elderly, infirmed, and anyone with a weaken immune system are especially vulnerable to biological warfare agent attacks(14) and may quickly succumb to its effects.**

## **TOP BIOLOGICAL WARFARE AGENTS, INCUBATION PERIODS, PREFERRED METHODS OF DELIVERY, SIGNS OF INFECTION AND KNOWN TREATMENTS.**

According to the Center for Disease Control, six biological agents pose the greatest risk to national security and are classified *“Category A.”* In order to receive this classification the BW agent must;

- Easily disseminated or transmitted person-to-person; and
- Cause high mortality, with potential for major public health impact; and
- Might cause public panic and social disruption; and

- Require special action for public health preparedness(15)

All “Category A” biological agents are either a virus or bacteria/bacteria derived substance, further all are colorless, odorless and tasteless, making them very difficult to detect during delivery. The next page contains, in alphabetical order, the names, nature, preferred delivery method, incubation period, starting the ending signs of infection and known fatality rate (16).

- **Anthrax**
  - Nature; bacterium
  - Incubation; 1-5 days
  - Delivery; aerosol
  - Signs of infection; fever, fatigue, vomiting, difficulty breathing and then bleeding.
  - Fatality rate; If inhaled up to 100%. Sheep have been shown to succumb to this deadly bacteria more quickly than humans
  - Treatment; ciprofloxacin, doxycycline, penicillin
- **Botulism**
  - Nature; bacterial toxin
  - Incubation; 1-5 days
  - Delivery; food, aerosol and water
  - Signs of infection; dry mouth, nausea, diarrhea, respiratory paralysis and blurred vision.
  - Fatality rate; up to 60% untreated. High survival rate with supportive care
  - Treatment; trivalent equine antiserum, despeciated equine heptavalent antitoxin
- **Plague**
  - Nature; bacterium
  - Incubation; 2-3 days
  - Delivery; rodents, aerosol, food and water
  - Signs of infection; fever, chills, headache, delirium.
  - Fatality rate; up to 100% untreated. High survival rate with early response
  - Treatment; ciprofloxacin and doxycycline
- **Smallpox**
  - Nature; virus
  - Incubation; 7-17 days
  - Delivery; aerosol
  - Signs of Infection; malaise, fever, headache, backache, vomiting, rash and lesions
  - Fatality rate; up to 5% variola minor strain, flat-type variant up to 95%, hemorrhagic variant 100%
  - Treatment; **no specific antiviral therapy**

- **Tularemia**
  - Nature; bacterium
  - Incubation; 2-10 days
  - Delivery; aerosol, food and water
  - Signs of infection; fever, prostration and weight loss
  - Fatality rate; up to 30-60% untreated
  - Treatment; streptomycin, gentamicin, ciprofloxacin
  
- **Viral Hemorrhagic Fever, i.e. ebola type diseases**
  - Nature; virus
  - Incubation; days to months
  - Delivery; aerosol delivery
  - Signs of infection; high fever, delirium, joint pains, uncontrolled bleeding from the orifices, convulsions.
  - Fatality rate; ranges 10% to 90%.
  - Treatment; ribavirin, limited amount of information on treatment.

## **ARE GOVERNMENT AGENCIES PREPARED FOR A BIOLOGICAL ATTACK**

Dr. Donald Henderson, dean emeritus of the John Hopkins School of Public Health has stated “*(the) United States is ill-prepared to confront a terrorist attack using biological weapons and health officials need more money to prepare against such attacks(17).*” This ominous warning was confirmed in 1998, when a bioterrorist exercise was conducted along the U.S. - Mexican border. The exercise revealed a disturbing lack of interagency coordination(18). Despite the assurances by the U.S. Government that America is prepared for a biological terrorist attack, according to a recent Newsweek poll of 1000 adults, nearly half are not confident that local and national governments are prepared to handle such an attack(19). As recent as October 2001, U.S. Senators Byrd (D-W.Va.) and Specter (R-Pa.) have criticized the US governments readiness capability claims if a biological warfare agent attack was carried out on U.S. soil(20). Some experts are even complaining that the **American public in general is “uninformed and ill-prepared for an attack with weapons of mass destruction”** (41). Further, as reported in the New York Times on Jan 8, 2003, one of the Army's top biodefense officials said that the Pentagon does not have vaccines to protect troops from some virulent biological agents (50).

## **PREPARTION FOR A BIO-TERRORIST ATTACK**

Besides mechanical preparation, which includes gas masks with filters specific to the BW agent(s) exposed to, and chemical/biological (NBC) suits, strengthening of the immune system to it's highest potential, and maintaining that potential is of the utmost importance due to the constant threat of BW agent exposure and possible delay, or complete lack of known treatments which may occur in effected areas.

Presently, antibiotics are utilized as the main treatment for victims exposed to BW agents(21). The type and amounts of antibiotics administered usually vary dependent upon the BW agent the targets/victims are exposed to, and when and how long said targets/victims were exposed. However, experts have warned that use of antibiotics may lead to antibiotic resistant forms of BW agents(43), further, a majority of this treatment is an “*after-effect,*” i.e. *after the target/victims are exposed to the BW agent and signs of infection start to appear in a group of people within a concentrated area.*

The most unfortunate fact of antibiotic treatments, for biological warfare casualties, is that they are only available through prescription and in the case of mass attack their availability may be severely limited, if available at all(18, 23). Further, the toxic, adverse side-effects of some antibiotics must be taken into serious consideration, if they are intended to be used as means to prepare the immune system for possible exposure to biological warfare agents. Considering these factors, the need for “*over-the-counter*” substances that have been shown to strengthen the immune system to its maximum potential would be beneficial for intended targets/victims. Ideally the substance should be able to enhance the effects of antibiotics to complement the beneficial effects of the antibiotics being administered.

Vaccines are available against certain BW agents, however their safety and efficacy has been called into question on many occasions(22). Also, most experts agree that they be administered long before an attack occurs in order to be effective. Further, Ken Alibek, former 1<sup>st</sup> Deputy Chief of the secret Soviet germ warfare program has stated “*We must stop deceiving people that vaccines are the most effective protection and start developing new therapeutic and preventive approaches and means based on a broad-spectrum protection*” (42).

Strengthening of the immune system, which in turn may reduce the risks of injury, disease or death caused by biological microorganisms is a logical approach to this issue. Substances that have been shown to boost the immune system to its highest potential, against viral and bacterial infections, may provide an effective defense against BW agents and/or may reduce the intended outcome of an attack. As Ken Alibek has stated we must “*...start developing new therapeutic and preventive approaches...*” (42) to this serious issue.

## IMMUNOMODULATORS

Immunomodulators are a category of biological response modifiers (BRM's). They are substances that modify the immune systems response to a threat upon it. They fall under two classifications, internal and external. Immunomodulators have been shown to stimulate the immune systems ability to fight a wide variety of conditions, including, but not limited to: cancer, arthritis, cholesterol imbalance, heart disease, Alzheimer's disease, high blood pressure, glaucoma, stroke, hepatitis, epilepsy, Crohn's disease, radiation and multiple sclerosis.

In the area of external immunomodulators, one stands above all the rest, it is called *Beta-1, 3-D glucan*(24). Commonly referred to as Beta glucan, it is food source derived, **and in high purity concentrations (above 90%)**, it has been shown to be a very powerful immune boosting substance. Beta glucan modulates and potentiates the macrophage (white blood cells), and keeps them in a highly prepared state. With this balancing/modulating effect, all subsequent immune responses improve against harmful microorganisms. This balancing/modulation effect is important because **research has shown that the macrophage has the ability to destroy deadly anthrax spores**(44,45,46).

In mid 2002, a joint study conducted by the Canadian Armed Forces and an America Dietary Supplement manufacturer which specializes in the production of a high purity, orally ingestible, over-the-counter **Whole Glucan Particulate Beta 1, 3-D Glucan** compound was published. The results of tests conducted on exposed subjects showed a 100% survival rate providing they maintained a daily therapeutic dosage amount starting 7 days before being exposed to lethal dosages of Anthrax. Subjects given the same therapeutic dosages after exposure to lethal amounts of Anthrax showed an 80% survival rate. Studies have also been conducted on lethal radiation exposure with positive results, concluding a 50% survival rate in the **Whole Glucan Particulate Beta Glucan** group vs. at or below 50% survival in

the control group (42). Studies are now being conducted in cooperation with the various military and government agencies to review other applications. Tests conducted on other infectious diseases have also showed very positive results. The product is under consideration for inventory in the US National Pharmaceutical Supply and all US Nuclear Power Stations.

This material is the only over-the-counter product that meets, or exceeds the “text book” guidelines set in peer review literature for high quality Beta 1, 3-D Glucan material. Many Glucan products have high amounts of fats and proteins. Studies have provided evidence that higher fat and protein content results in less absorption through the intestinal walls, thereby reducing the effectiveness. Through independent testing, a high quality Beta 1-3D Glucan product should show virtually non-detectable levels of fats (making the material indigestible as an immune modulator) and proteins (causing possible complications in persons with allergies). This removal process must be done without disturbing the precise molecules that provides the cellular activity described in so many of the successful medical studies. Independent test verification of the contents of a Beta 1, 3-D Glucan product insures a safe, effective product.

Historical reviews of studies conducted on high purity Beta 1-3D Glucan, not related to any one product, have shown that increases nonspecific host resistance (broad spectrum resistance) to a variety of bacterial(25), fungal, parasitic and viral infections(26). It has even proven effective against experimental bacterial, viral, and fungal disease(27). The results of studies conducted on this substance, on a wide variety of conditions are astounding. Beta Glucan creates an effective arsenal of defense for the body(28). There have been no known adverse effects combining Beta-1, 3-D glucan with pharmacological drugs. In fact, Beta-1, 3-D glucan has been shown in certain studies to enhance antibiotics and cholesterol reducing drugs. It has been shown to be completely safe and non-toxic with know known adverse side effects(27).

Further studies on this substance, utilizing high purity concentrations (above 90%), have produced astounding results. These studies include; High Risk Surgical Patients -**“decreased intravenous antibiotic requirements (0.4 days vs. 10.3 days), shorter intensive care unit length of stay (0.1 days vs. 3.3 days) and fewer infectious complications (1.4 vs. 3.4)”**(29); Radiation Protection - **“increase cell survival or enhance repopulation by the remaining cells can reduce time required for supportive therapy and enhance its effectiveness.... can enhance hematopoietic and functional cell recovery after irradiation”**(30); Trauma Patients -**“mortality rate was significantly less in the glucan group (0% vs. 29%)”**(31); Endurance- **“Run time to exhaustion at 90% VO<sub>2</sub>max was significantly longer by 1.2 min”**(32); Cancer - **“the size of the lesion was strikingly reduced in as short a period as 5 days”**(33); Staphylococcus aureus -**“resulted in a significantly increased survival”**(34); Streptococcus pneumoniae - **“Glucan significantly increased survival in the splenectomy group (75%) compared to controls (27%)”**(35); Wound healing - **“data indicate(s) that macrophage modulation with glucan phosphate will increase tensile strength in experimental colon and skin wounds”**(36); E-Coli - **“This protective effect of semisoluble aminated glucan seemed to last at least 3 weeks”**(37).

To date there has been over 800+ studies on many other conditions, completed at some of the most prestigious institutions in the world over the last forty years including, but not limited to; Harvard, Tulane, National Cancer Institute, Armed Forces Radiobiology Institute, FDA and John Hopkins.

## CONCLUSION

The threat of biological warfare agents being release upon an unsuspecting, unprepared and/or unknowing population has grown in magnitude with the proliferation of terrorist activity throughout the world in the later part of the 20<sup>th</sup> century, as well as this century. We, as civilized society face an unknown enemy whose country, attack methods and face may never be known do the stealth characteristics of bioweapon delivery technology. These weapons can be targeted and delivered against innocent people, as well as their food or water supplies(38) and done easily and cheaply(8, 39). In most cases, biological warfare agents do not leave a trace until after they have infected the targeted population(40).

The possibility that a targeted population will have at its disposal an on-hand supply of antibiotics shown to be effective against BW agents(16), for immediate application, is unknown or non-existent. In most cases the availability of antibiotics, in the amounts required to treat casualties will have to come from government resources which an alarming amount of Americans do not believe the government is prepared to accomplish(18,20). Further, you, as a member of the general population at large cannot just go out and purchase any of the antibiotics when you wish beforehand, to be used for preparation purposes. They are considered pharmaceutical drugs and an doctors prescription is required to legally obtain them. Further, the adverse side-effects must be taken into consideration if one wishes to use them to prepare, in the unfortunate event that one believes they will become a target/victim. Another question also arises; what if one does not ever become an actual victim? Is one willing to cope with the possible adverse side effects of such treatments?

For the majority of the population, the only alternative for immune system preparation is to enhance your immune systems defensive abilities to it's maximum potential, so that if, or when, established treatment's become available, chances of recovery and/or survival increase. The immunomodulator Beta glucan appears to be the perfect substance to perform this task. Further, even if one never becomes a victim to harmful microorganism exposure, the benefits of Beta glucan warrant its usage on a daily, continual basis, due in part to lifestyle and environmental conditions that have a daily detrimental effect upon the body's immune system.

### FOOTNOTES;

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