

Title

Formulation and Chemical Composition of a High Efficacy Disinfectant against Avian Influenza H5N1 Virus.

Description

The use of combination of twin-chain quaternary ammonium compound, ethyl alcohol, non-ionic surfactant, essential oil and water as disinfectant to combat the current high lethality and virulence H5N1 Virus has been an area of considerable research and investigation of the patentee.

This invention relates to the composition and method of manufacture of a fast acting disinfectant against the highly pathogenic H5N1 Virus by synergistically blending a major portion alcohol with minor portion of twin-chain quaternary ammonium compound, essential oil, non-ionic surfactant, and solvent.

BACKGROUND OF THE INVENTION

Avian influenza is an infection caused by avian (bird) influenza (flu) viruses. These influenza viruses occur naturally among birds. Wild birds worldwide carry the viruses in their intestines, but usually do not get sick from them. However, avian influenza is very contagious among birds and can make some domesticated birds, including chickens, ducks, and turkeys, very sick and kill them.

Infected birds shed influenza virus in their saliva, nasal secretions, and feces. Susceptible birds become infected when they have contact with contaminated secretions or excretions or with surfaces that are contaminated with secretions or excretions from infected birds. Domesticated birds may become infected with avian influenza virus through direct contact with infected waterfowl or other infected poultry, or through contact with surfaces (such as dirt or cages) or materials (such as water or feed) that have been contaminated with the virus.

Usually, "avian influenza virus" refers to influenza A viruses found chiefly in birds, but infections with these viruses can occur in humans. The risk from avian influenza is generally low to most people, because the viruses do not usually infect humans. However, confirmed cases of human infection from several subtypes of avian influenza infection have been reported since 1997. Most cases of avian influenza infection in humans have resulted from contact with infected poultry (e.g., domesticated chicken, ducks, and turkeys) or surfaces contaminated with secretion/excretions from infected birds.



During an outbreak of avian influenza among poultry, there is a possible risk to people who have contact with infected birds or surfaces that have been contaminated with secretions or excretions from infected birds.

Of the human cases associated with the ongoing H5N1 outbreaks in poultry and wild birds in Asia and parts of Europe, the Near East and Africa, more than half of those people reported infected with the virus have died. Most cases have occurred in previously healthy children and young adults and have resulted from direct or close contact with H5N1-infected poultry or H5N1-contaminated surfaces. In general, H5N1 remains a very rare disease in people. The H5N1 virus does not infect humans easily, and if a person is infected, it is very difficult for the virus to spread to another person.

Nonetheless, because all influenza viruses have the ability to change, scientists are concerned that H5N1 virus one day could be able to infect humans and spread easily from one person to another. Because these viruses do not commonly infect humans, there is little or no immune protection against them in the human population. If H5N1 virus were to gain the capacity to spread easily from person to person, an influenza pandemic (worldwide outbreak of disease) could begin

No one can predict when a pandemic might occur. However, experts from around the world are watching the H5N1 situation in Asia and Europe very closely and are preparing for the possibility that the virus may begin to spread more easily and widely from person to person.

Due to the high lethality and virulence of H5N1 Virus, its endemic presence, its increasingly large host reservoir, and its significant ongoing mutations, the H5N1 virus is the world's largest current pandemic threat. The world is teetering on the edge of a pandemic that could kill a large fraction of the human population.

In view of the above, the patentee has invented a highly effective disinfectant to protect those who are exposed to the pathogenic H5N1 virus through direct or direct contact with the said virus.

SUMMARY OF THE INVENTION

Patentee has discovered the formulation and chemical composition of a high efficacy disinfectant against H5N1 Virus by synergistically blending a major portion of alcohol and a minor portion of twin-chain quaternary ammonium compound, essential oil and non-ionic surfactant with water.

In an embodiment of the invention the ethyl alcohol (C₂H₅OH) is used as a co-disinfectant.

In another embodiment of the invention Didecyl Dimethyl Ammonium Chloride is used as the main disinfecting agent against H5N1

In yet another embodiment of the invention non-ionic surfactant is used a cleaning agent.

In yet another embodiment of the invention the peppermint essential oil is used a synergistic co-disinfectant.

In yet another embodiment of the invention water is used a co-carrier of the synergistically blended chemical raw materials.

The foregoing embodiments are susceptible to considerable variation in its practice.

Accordingly, the embodiments are not intended to be limited to the specific exemplifications set forth hereinabove. Rather, the foregoing embodiments are not within the spirit and scope of the appended claims, including the equivalents thereof available as matter of law.

The patentees do not intend to dedicate any disclosed embodiments to the public, and to the extent any disclosed modifications or alterations may not literally fall within the scope of the claims, they are considered to be part hereof under the doctrine of equivalents.

DETAILED DESCRIPTION OF THE DISINFECTANT EFFICACY OF SAID INVENTION.

In accordance with this discovery, it is an object of the invention to provide the test procedures to ascertain the disinfectant efficacy of said invention against Avian Influenza H5N1 Virus.

The method and test procedures are herein described.

1.0 Purpose

The purpose of the test is to ascertain the efficacy of said invention/disinfectant against Avian Influenza H5N1 virus.

1.1 Observation Parameter

The test parameter is based on the observation of the percentage of death virus after the introduction of said invention/disinfectant.

2.0 Test Method

Using Isolated AI H5N1 virus from Tasikmalaya 2005, collected from Microbiology Department of Faculty of Veterinary, Bogor Institute of Agriculture (IPB). The test was done in the unit of the Integrated Services of Medicine of Microbiology, Faculty of Veterinary IPB. Five live egg embryos Specific Pathogen Free (SPF) were used as medium for the test.

2.1 Test Procedure

Three components were used; AI H5N1 Virus, Live Egg Embryos and said disinfectant 100% concentration.

The preparation of the disinfectant solution was done by diluting 1 part of said disinfectant to 1 part distilled water by weight.

Subsequently, 2 ml of AI H5N1 Virus (10^9 EID₅₀) was introduced in to the said disinfectant solution and then the mixture was incubated for 15 minutes at 37°C.

0.2 ml of said mixture was then injected into 11 days old live embryo via allantois and kept in the incubator at 37°C, observation was then carried out daily till the death of embryo.

The liquid of the allantois was taken out for rapid test, HA/HI using AI standard serum.

3.0 Results

Based on observation all the embryos died two days after the introduction of the mixture of said disinfectant and H5NI Virus. The liquid from the allantois of the death embryo was then taken for rapid test HA/HI using AI standard serum. The results as tabulated below:

Table1. The Efficacy Result of said invention/disinfectant against AI H5NI Virus

Concentration	Dilution	Percentage of Inactive Virus AI H5N1 (%)
100	1:1	100

Based on Table 1, the said invention/disinfectant has the ability to inactivate 100% of AI H5NI virus.

4.0 Conclusion

Based on the said efficacy test, the said invention/disinfectant is highly effective against Avian Influenza H5N1 Virus.

50. Reference

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Claims:

What is claimed is:

- 1) A formulation and chemical composition of a fast acting disinfectant and cleaner against highly pathogenic H5N1 Virus, comprising of the following ingredients:
 - a. Alcohol, Quaternary Ammonium Compound, Essential Oil, Non-Ionic Surfactant and solvent.
- 2) A formulation and chemical composition as in claim 1a wherein the Alcohol used is either Methyl or Ethyl Alcohol.
- 3) A formulation and chemical composition as in claim 2 wherein the chemical formula for the Methyl Alcohol is CH_3OH and the Ethyl Alcohol is $\text{C}_2\text{H}_5\text{OH}$.
- 4) A formulation and chemical composition as in claim 1a wherein the Quaternary Ammonium Compound is a Twin-Chain Quaternary Ammonium Compound.
- 5) A formulation and chemical composition as in claim 4 wherein the wherein the Twin-Chain Quaternary Ammonium Compound consists of Didecyl Dimethyl Ammonium Chloride.
- 6) A formulation and chemical composition as in claim 1a wherein the Essential Oil is Peppermint or spearmint.
- 7) A formulation and chemical composition as in claim 1a wherein the Non-Ionic surfactant used is either Alcohol Ethoxylate or Nonyl Phenol Ethoxylate.
- 8) A formulation and chemical composition as in claim 7 wherein the said surfactants consist of either 9 or 10 moles of ethylene oxide.
- 9) A formulation and chemical composition and chemical as in claim 7 wherein said surfactant used is Nonyl Phenol.
- 10) A formulation and chemical composition as in claim 9 wherein the Nonyl Phenol surfactant consists of 10 moles of ethylene oxide.
- 11) A formulation and chemical composition as in claim 10 wherein the content of said surfactant ranges from 0.5 to 5 wt %.
- 12) A formulation and chemical composition as in claim 1a wherein the solvent used is water.

- 13) A formulation and chemical composition as in claim 12 wherein the water content ranges from 1% to 60 % wt/wt
- 14) A formulation and chemical composition and method of manufacture as in claim 3 wherein the alcohol is ethyl alcohol.
- 15) A formulation and chemical composition as in claim 14 wherein the composition content of said alcohol ranges from 10 % to 90 % wt/wt.
- 16) A formulation and chemical composition as in claim 5 wherein the composition content of Didecyl Dimetyl Ammonium Chloride ranges from 0.5% to 10% wt/wt.
- 17) A formulation and chemical composition as in claim 6 wherein the essential oil used is peppermint.
- 18) A formulation and composition as in claim 17 wherein the botanical name of the peppermint used is *Mentha Peperita*.
- 19) A formulation and chemical composition as in claim 18 wherein the content composition of peppermint ranges from 0.1% to 5 % wt/wt.
- 20) A formulation and chemical composition of a high efficacy disinfectant and cleaner against highly pathogenic H5N1 Virus, composition prepared in accordance with the method of claim 1, composition comprising:
- a) 10- 50 wt % of Ethyl Alcohol
 - b) 0.5- 5 wt % of Quaternary Ammonium Compound
 - c) 0.1- 3 wt % of Essential Oil
 - d) 0.5- 3 wt % Non-Ionic Surfactant
 - e) 10- 50 wt % Solvent
- 21) A fast acting disinfectant and cleaner as claim in 20 comprising of
- a) 50-90 wt % of Ethyl Alcohol
 - b) 1-2 wt % of Quaternary Ammonium Compound
 - c) 3-5 wt% of Essential Oil
 - d) 3-5 wt % of Non-Ionic Surfactant
 - e) 1- 3 wt % of solvent