

## VARIOUS REMEDIES FOR SWINE FLU

**Jonish Varshney\*, P. K. Sharma, Vipin Kumar Garg, Nitin Kumar, Rupesh Dudhe**

**Department of Pharmaceutical Technology, Meerut Institute of Engineering & Technology, Baghat Bypass Crossing, Delhi-Haridwar Highway, NH-58, Meerut-250005 (UP) India  
[jonishvarshney@gmail.com](mailto:jonishvarshney@gmail.com), Mob. No. 91-9236519223**

### **Summary**

Swine flu is an infection caused by a virus. It's named for a virus that pigs can get. People do not normally get swine flu, but human infections can and do happen. The virus is contagious and can spread from human to human. Symptoms of swine flu in people are similar to the symptoms of regular human flu and include fever, cough, sore throat, body aches, headache, chills and fatigue. Swine flu has been confirmed in a number of countries and it is spreading from human to human, which could lead to what is referred to as a pandemic flu outbreak. Pandemic flu is different from ordinary flu because it's a new flu virus that appears in humans and spreads very quickly from person to person worldwide. Till now effective treatment as well as prevention measures have not been developed against this virus. Companies are trying to develop vaccines against this virus but still none is in the market.

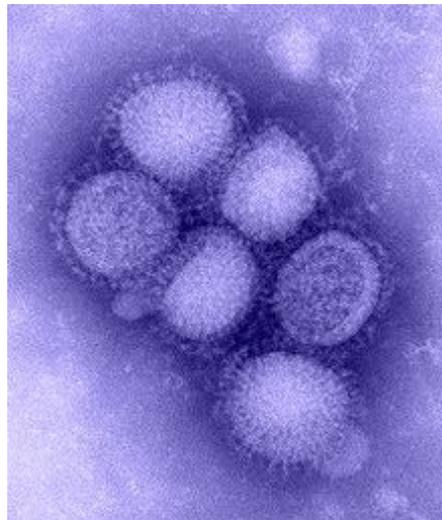
**Key words:** H1N1, Swine Flu, Tamiflu

### **Introduction**

Swine flu is respiratory disease caused by a new strain of influenza, which is known as the H1N1 virus. H1N1 is the same kind of influenza strain that is responsible for seasonal flu in humans. A better way to explain the swine flu viruses is that these are a transmuted version of the flu virus from pigs and humans, a fact that also explains the absence of any vaccine for the disease. Swine flu or H1N1 influenza pandemic is a worldwide outbreak of a unique strain of influenza that was first detected in April 2006 in Mexico[1]. It is a transmutation of sixteen different types of influenza viruses. Of the sixteen, 6 have been isolated from humans at the molecular level (H1, H2, H3, H5, H7, H9). 3 of these have been involved in past pandemics (H1, H2, H3). Traditional pandemic surveillance has focussed on monitoring antigenic shift, meaning the re-assortment of novel haemagglutinins into seasonal human influenza-A viruses during rare events of double infection with seasonal and zoonotic strains. H5, from avian H5N1 influenza, has been the major cause for concern in recent years. However, the 2009 H1N1 zoonotic event demonstrates that even serotypes already encountered in past human pandemics may constitute new pandemic threats. The protein sequence divergence of the 2009 zoonotic H1 from human seasonal influenza H1 is around 20–24%. A similar level of divergence is found between the 2009 H1 and European swine flu. By contrast, its divergence from North American swine flu strains is around 1–9%. Given that the divergence between H1 and its nearest serotype neighbour H2 is around 40–46%, the 2009 H1 may be broadly considered as halfway towards a new serotype. H1N1 virus, which is commonly known as Swine flu has infected thousands of people in more than 170 countries around the world. The World Health Organization (WHO) has been tracking the human cases of avian influenza A (H5N1), and up to December 30, 2009, 282 deaths (467 cases; 60.4% mortality) have been reported [2]. WHO officially raised the phase of pandemic alert to level 6 with regard to the novel H1N1 2009 influenza on June 11, 2009. As of January 10, 2010, more than 208 countries have reported the laboratory confirmed cases of the novel influenza H1N1 2009 strains, including at least 13,554 deaths.

### **History of Swine flu virus**

In 1976, there was an outbreak of swine flu at Fort Dix. This virus is not the same as the 2009 outbreak, but it was similar as it was an influenza A virus that had similarities to the swine flu virus. There was one death at Fort Dix. The government decided to produce a vaccine against this virus, but the vaccine was associated with neurological complications (Guillain-Barré syndrome) and was discontinued. Some individuals speculate that formalin, used to inactivate the virus, may have played a role in the development of this complication in 1976. There is no evidence that anyone who obtained this vaccine would be protected against the 2009 swine flu. One of the reasons it takes a few months to develop a new vaccine is to test the vaccine for safety to avoid the complications seen in the 1976 vaccine. New vaccines against any flu virus type are usually made by growing virus particles in eggs. A serious side effect (allergic reaction such as swelling of the airway) to vaccines can occur in people who are allergic to eggs; these people should not get flu vaccines. Individuals with active infections or diseases of the nervous system are also not recommended to get flu vaccines[3] Swine flu is respiratory disease caused by a new strain of influenza, which is known as the H1N1 virus. H1N1 is the same kind of influenza strain that is responsible for seasonal flu in humans. H1N1 strain found in humans but a combination of the swine, human and avian viruses.



**FIG.NO.1 H1N1 INFLUENZA VIRUS[4]**

## **SWINE FLU IN HUMANS**

The influenza viruses (types A, B, C) are enveloped RNA viruses with a segmented genome; this means the viral RNA genetic code is not a single strand of RNA but exists as eight different RNA segments in the influenza viruses. A human (or bird) influenza virus can infect a pig respiratory cell at the same time as a swine influenza virus; some of the replicating RNA strands from the human virus can get mistakenly enclosed inside the enveloped swine influenza virus. For example, one cell could contain eight swine flu and eight human flu RNA segments. The total number of RNA types in one cell would be 16; four swine and four human flu RNA segments could be incorporated into one particle, making a viable eight RNA segmented flu virus from the 16 available segment types. Various combinations of RNA segments can result in a new subtype of virus (known as antigenic shift) that may have the ability to preferentially infect humans but still show characteristics unique to the swine influenza virus (see Figure 1). It is even possible to include RNA strands from birds, swine, and human influenza viruses into one virus if a cell becomes infected with all three types of influenza (for example, two bird flu, three swine flu, and three human flu RNA segments to produce a viable eight-segment new type of flu viral genome). Formation of a new viral type is considered to be antigenic shift; small changes in an individual RNA segment in flu viruses are termed antigenic drift and result in minor changes in the virus. However, these can accumulate over time to produce enough minor changes that cumulatively change the virus antigenic makeup over time[5].

The most common of all swine flu symptoms is high body temperature, in excess of 38°C/100.4°F, Sudden, persistent cough, Headache, Loss of appetite, Stinging throat, Runny nose, Extreme tiredness, Loss of energy, Myalgia.

## **DIAGNOSIS OF SWINE-LIKE HUMAN H1N1**

The main test for detection of swine flu is the xTAG™ RVP test, was developed to detect 20 different virus types and subtypes a single test using multiplex RT-PCR and detection with a micro fluidic array on the Luminex 100 instrument[6]. The test amplifies a conserved part of the matrix gene found in all influenza A viruses and specific regions

of the H1 or H3 genes[7]. The test therefore simultaneously detects influenza A and determines the H1 or H3 subtype. Since all seasonal influenza viruses in man over the past 20 years have been either H1 or H3, the RVP test can effectively detect the presence of non-seasonal (non-H1, non-H3) virus by virtue of a positive matrix gene signal and negative H1 and H3 signals, a combination of results that flag a “new” influenza subtype and potential pandemic threat.

Upper respiratory specimens such as nasopharyngeal aspirates or nasopharyngeal swabs, throat or nose swabs are suitable for the detection of S-OIV. World Health Organization recommends that suspected clinical cases of swine-like H1N1 influenza A infection are confirmed by

- (1) Specific RT-PCR assays that differentiate S-OIV from seasonal influenza viruses,
- (2) The isolation and identification of swine-like H1N1 influenza,
- (3) the detection of a fourfold rise of neutralization or HAI antibodies to S-OIV[8].

It is recommended that patient samples are tested by RT-PCR for influenza A virus target (e.g. M gene) and for the S-OIV H1N1 HA in parallel. Specimens that are positive in both the M gene and S-OIV H1 and negative for seasonal influenza A H1 and H3 can be confirmed as S-OIV infection. A number of sensitive and specific RT-PCR and real time PCR methods for detecting S-OIV and differentiating it from seasonal H1N1 are now available[9].

The S-OIV H1N1 can be isolated in MDCK cells in the presence of trypsin (as for other seasonal influenza viruses) or in embryonated hens egg. Turkey, chicken, guinea pig and human red blood cells will agglutinate S-OIV. Virus culture is recommended to be carried out in BSL-3[10].

## **SWINE FLU VACCINE**

Three Pharma companies - Serum Institute of India (Pune), Bharat Biotech (Hyderabad) and Panacea Biotech (New Delhi) - are working on developing the vaccine. The Pune company has made some real progress While the Serum Institute is developing an "egg-based" vaccine, the other two are developing "cell line vaccines.

MSNBC reports that the first batch (3.4 million doses) of swine flu vaccine arriving in the U.S. is a nasal spray called Flu Mist. Flu Mist contains the live flu virus but it supposed to be a weakened strain of the virus.

## **MECHANISM OF ACTION OF SWINE FLU ADJUVANTS**

MF59 has been used as an adjuvant for the influenza vaccine and more is a potentially pandemic vaccine as vaccination for the swine flu. It has been shown to increase the immune response against seasonal influenza vaccine strains in the elderly and other at-risk populations. They enhance antigen uptake, activate innate immune pathways and induce a local recruitment of blood cells[11]. .Modulation of innate immune responses by MF59 is a very complex process. There are two major functional groups, TLR-dependent and -independent adjuvant. TLR-dependent adjuvant act directly on dendritic cells (DCs), inducing the up regulation of cytokines, MHC Class II, and co stimulatory molecules and promoting DC migration to the T-cell area of the lymph node. MF59 might also act as a local pro-inflammatory adjuvant, which induces the influx of blood mononuclear cells[12]. All of these adjuvants modulated a cluster of common genes, designated as “adjuvant core response genes”, characterized by the up regulation of cytokines, chemokines and adhesion molecules . MF59 activates multiple inflammatory and host defense pathways at the injection site and induces the recruitment of MHC Class II and CD11b cells. MF59 stimulates human macrophages, monocytes and granulocytes to release monocyte and granulocyte attracting chemokines like CCL2, CCL3, CCL4 and CXCL8 [13].

## **REMEDIES OF SWINE FLU**

Swine flu has been spreading at a rapid pace in India as well as in most other countries of the world, it must be remembered that swine flu is a curable disease and can be effectively cured if treated properly. A swine flu patient must not be involved in too much strenuous work and should drink plenty of liquids to keep himself hydrated. Alcohol and tobacco are strictly prohibited for swine flu patients and medicines such as paracetamol can be taken to get relief from fever and muscle pain. In extreme cases, antiviral drugs and hospitalization may be required. The best way, however, to avoid any emergency situation is to contact your doctor immediately if you suspect of having swine flu.

A few things to remember for swine flu cure at home are:

- Keep the patient in a separate room, away from other members of the household.
- Everyone in the house should wash their hands regularly and wear a mask while going near the patient.
- The members of the house should also take antiviral drugs such as tamiflu, if the doctor prescribes it.

Children should not be given medicines such as aspirin for its tendency to cause neurological disorders[14].

#### **ALLOPATHIC REMEDY**

The U.S. Centers for Disease Control and Prevention recommends the use of Tamiflu (oseltamivir) or Relenza (zanamivir) for the treatment and/or prevention of infection with swine influenza viruses; however, the majority of people infected with the virus make a full recovery without requiring medical attention or antiviral drugs[15]. The virus isolates in the 2009 outbreak have been found resistant to amantadine and rimantadine [16].

In the U.S., on April 27, 2009, the FDA issued Emergency Use Authorizations to make available Relenza and Tamiflu antiviral drugs to treat the swine influenza virus in cases for which they are currently unapproved. The agency issued these EUAs to allow treatment of patients younger than the current approval allows and to allow the widespread distribution of the drugs, including by non-licensed volunteers [17].

#### **HOMEOPATHIC REMEDY [18]**

Homeopathy can both prevent and cure swine flu, sans any side effects, say doctors who practise this alternative medicine system in India where over 700 people have been diagnosed with the disease. Gelsemium and Bryonia were the two homeopathic remedies that proved to be effective against the H1N1 strain back then. These could be of great use even today. various homeopathic treatment are as follows-:

##### **Gelsemium gels**

This remedy corresponds to the commencement of the trouble, when the patient is weak, tired and aches throughout the body. It removes speedily the intense aching and muscular soreness. There is constant chilliness and the patient hugs the fire; the fever is less acute than that

of Aconite, and the cough is hard and painful. There are paroxysms of sneezing with excoriating discharge, and great torpor and apathy.

### **Baptisia**

Influenza with marked gastro-intestinal symptoms may need this remedy, especially when there are putrid diarrhoea stools. Clarke considers this remedy the nearest specific for the disease; he prefers the 30th potency. Hughes also praises it, but uses it in the 1x and 2x dilutions, which seem to have more extensive testimony as to their efficacy.

### **Eupatorium perfoliatum**

This remedy has much soreness and aching of the entire body; hoarseness and cough, with great soreness of the larynx and upper respiratory tract. Coryza with thirst. Drinking causes vomiting. The cough is a very shattering one, hurts the head and chest, and as in Drosera, the patient holds the chest with the hands. The breakbone pains are characteristic of the remedy. Add to these symptoms acute bilious derangements, and it is all the more indicated. Many physicians rely on this remedy in influenza / flu almost exclusively in the early stages.

### **Sabadilla [Sabad]**

Sneezing is the great keynote of this remedy. Sneezing and lachrymation on going into the open air. The throat is swollen and the pain is worse on empty swallowing; the sneezing is excessive, shaking the whole body. Shudderings, with gooseflesh chills creeping upwards, are also prominent symptoms. Frontal headache, dryness of mouth, without thirst and cough, worse on lying down, are additional symptoms. It suits well many cases of the catarrhal form of flu; other remedies having sneezing are Cyclamen and Euphorbia.

### **Arsenicum [Ars]**

This remedy covers more phases of flu than perhaps any other remedy. Hughes believes that it will cut short an attack, especially when there is a copious flow, prostration and paroxysmal coryza. Its periodicity makes it suitable to epidemics, and it suits the early symptoms when the affection is in the upper portion of the respiratory tract. The burning dryness and copious watery excoriating secretion and the involvement of the conjunctiva are unmistakable indications. Langour and prostration are prominent symptoms.

**Arsenicum iodide**

Chills, flushes of heat and severe fluent coryza, discharge irritating and corrosive, sneezing and prostration. It corresponds to true influenza and is highly recommended by Hale. Sanguinaria nitrate is especially valuable when the trachea and larynx are affected. Phytolacca is specific when the throat is inflamed and spotty, with great hardness and tenderness of the glands.

**Dulcamara [Dulc]**

This is one of our best remedies in the acute form; the eyes are suffused, the throat is sore and the cough hurts because of the muscular soreness. If brought on by damp, cold changes in the weather, so much the surer is Dulcamara indicated.

**Bryonia**

The trouble here is largely bronchial and going downward. When a person is very grumpy and feels miserable with the flu, wanting only to lie still and be left alone, this remedy is likely to be useful. Headache, muscle aches, and cough or stomach pain may be the major symptoms. Everything feels worse from even the slightest motion. The person's mouth usually is dry, with a thirst for large cold drinks.

**AYURVEDIC REMEDY**

Ayurvedic drugs can prevent flu without any side effects. There are various drugs which are used to treat swine flu. They are as follows-

**Elderberry (Sambucus nigra)**

The plant with the strongest antiviral action is elderberry. This is because black elderberry proteins contain an element called antivirin, which has been shown to disarm the flu virus by preventing it from invading healthy cells' membranes. Researchers formulated an elderberry extract which was tested against eight different strains of the flu virus (both Type A and Type B) in the lab and found to be effective against all of them. In one study, 60 flu victims took either 15 mL of elderberry extract or a placebo, four times a day for five days[19].

**Licorice**

Licorice (from the root of *Glycyrrhiza glabra*) is a powerful antiviral. The licorice root contains numerous compounds, including glycyrrhizic acid (GA). GA inhibits the replication of several viruses in vitro including herpes viruses, HIV, and the SARS corona virus [20]. But when taken orally, GA is mostly hydrolyzed to glycyrrhetic acid by bacteria in the gastrointestinal tract before GA can be absorbed, and scientists therefore administer it intravenously in therapeutic situations. Licorice is also useful for treating symptoms of flu, including sore throat, bronchitis, cough, and arthritis, and is known to boost adrenal function.

**Garlic (*Allium sativum*)**

Garlic is antiviral and antibacterial, and several of the sulfur compounds in garlic are active against the flu virus [21]. Fresh garlic has been proven to destroy viral infections on contact such as measles, mumps, chicken pox, herpes simplex and zoster, viral hepatitis, and scarlet fever.

**Lemon balm (*Melissa officinalis*)**

This is one of the most traditional herbal cures for flu, and has been used for centuries. It is such a powerful antiviral that the active ingredient has been isolated and it is currently sold in Germany as “Lomaherpan” to cure herpes. Lemon balm also relieves many of the symptoms of flu, bringing relaxing sleep, relieving cramps and gas, stopping spasms, and relieving pain.

**Juniper (*Juniperus, various species*)**

Juniper contains a potent antiviral compound (deoxypodophyllotoxin) that seems to inhibit many different viruses. Many herbalists recommend it as a cure for flu. It tried to stop airborne infection spreading by spraying vaporized essential oils into the atmosphere of flu wards – juniper was one of the oils which was found to be particularly effective.

**Shiitake (*Lentinus edodes*)**

This mushroom has antiviral and immune-stimulating properties. It contains a compound called lentinan that has been found to protect against viral encephalitis in mice [22], and has been an important medicinal weapon in China, Korea and Japan for thousands of years.

**Ginger (*Zingiber officinale*)**

Ginger contains ten antiviral compounds. It reduces pain and fever, acts as a cough suppressant and is “warming” – it can help heat the body up, helping you to ‘sweat it out’. Herbalist Michael Tierra recommends drinking hot ginger tea (ginger root infused for at least ten minutes) after a hot bath and then getting into bed with lots of duvets or blankets. Viral replication can’t happen once the body reaches high temperatures, and viruses will die in body temperatures that exceed 101°F.

**Honeysuckle and Forsythia**

This is a herbalists’ favourite cure for flu, especially if garlic alone has not been strong enough. Honeysuckle contains several virus-destroying compounds. This combination works well as a tea, to be drunk several times a day.

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