WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.074
Volume 7, Issue 9, 293-304. Review Article ISSN 2277– 7105

A CRITICAL ANALYSIS OF AYURVEDIC HERBS USED IN VAATSHLESHAMIK JWARA W.S.R. TO SWINE FLU

Dr. Manisha Kumari Kharadi*[1], Prof. Kamini Kaushal[2], Dr. Ashwini Kumar Sharma[3], Dr. Rajesh Chandra Mishra[4] and Dr. Deepak Verma[5]

PG Scholor[1,5], Prof. & H.O.D.[2], Asso. Prof.[3,4]

Department of Dravyaguna Vijnana, MMM Govt. Ayurvedic College, Udaipur.

Article Received on
11 March 2018,

Revised on 01 April 2018,
Accepted on 21 April 2018,

DOI: 10.20959/wjpr20189-12022

***Corresponding Author**
Dr. Manisha Kumari Kharadi
PG Scholor, Department of Dravyaguna Vijnana, MMM Govt. Ayurvedic College, Udaipur.

ABSTRACT

Major concept of *aurveda* is prevention and cure of a disease by natural ways. In *Ayurveda* it is said that *pragyapradh* is the main cause of *janpadodhwans* (epidemic/pandemic disease). In August 2010, the World Health Organization declared the swine flu pandemic officially over. If transmission does cause human flu, it is called zoonotic swine flu. Symptoms of zoonotic swine flu in humans are similar to those of influenza and of influenza-like illness in general, namely chills, fever, sore throat, muscle pains, severe headache, coughing, weakness, shortness of breath, and general discomfort. According to *Ayurveda*, prevention is always better than cure, and the primary aim goal of *Ayurveda* is to maintain the health of a healthy person. As stated: *"Swasthasya Swasthya Rakshanam…"* so that ayurvedic herbs might be a milestone in the prevention and cure of swine flu. These medicinal herbs mainly act via two basic approaches against H1N1 infection, namely enhancement of overall immunity of the individual or by acting against the virus by preventing viral replication or by inhibiting. Aim of review study is many types of antiviral herbal drugs are described in a*yurvedic* texts which is quite useful in swine flu, describing here with their properties.

KEYWORDS: *Ayurveda*, *Janpadodhwans* (Epidemic/Pandemic Disease), *Vaatshleshamik Jwara* (Swine Flu), Herbal Drugs.

INTRODUCTION

Swine flu is an emerging viral infection that is a present global public health problem. There are many thousands cases of swine flu in the present day. This new infection can be seen

around the world in the present day. This infection is a kind of variant of H1N1 influenza infection.[1] Swine flu, also called pig influenza, swine influenza, hog flu and pig flu. Swine influenza virus (SIV) or S-OIV (swine-origin influenza virus) is any strain of the influenza family of viruses that is epidemic in pigs.[2] Swine flu is a respiratory disease of pigs caused by type A influenza viruses (H1N1 subtype) that causes regular outbreaks in pigs. People do not normally get swine flu, but human infections can and do happen. Infection of swine flu spread by either droplet and air borne. Swine flu viruses have been reported to spread from person-to-person, but in the past, this transmission was limited and not sustained beyond three people.[3] The H1N1 virus particle is about 80–120 nanometers in diameter and roughly spherical.[4,5] Influenza A is a single stranded, negative sense RNA genome containing virus belongs to the family Orthomyxoviridae and responsible for acute respiratory illness in humans from last several decades. The Influenza A virus has marked distinguished severity among the three subtypes (Influenza A, B and C) and infects a variety of animals such as pigs, humans, sea mammals, horses and various bird species. Influenza A viruses are classified into subtypes based upon the antigenic properties of their Hemagglutinin (HA) and Neuraminidase (NA) surface glycoproteins. Hemagglutinin is responsible for binding to sialic acid at the termini of glycans acting as receptors on the host cell plasma membrane. Neuraminidase is involved in the final step of the replication cycle and helps in the release of mature virus. The RNA dependent RNA polymerase of Influenza virus lacks proof reading activity, which in turn mutates the genome, there by causing various endemics and pandemics worldwide.[6] The influenza A virus can be further classified into subtypes by serological reactivity of its surface glyco-protein antigens. H1N1 is a serotype of influenza A virus that commonly causes swine flu in humans.[7–10] The most common subtypes of Influenza A circulating in human population are H1N1, H3N2, H5N1.[11]

MODE OF TRANSMISSION OF SWINE FLU

1. Transmission between Pigs

The main route of transmission is through direct contact between infected and uninfected animals.[12] These close contacts are particularly common during animal transport. Intensive farming may also increase the risk of transmission, as the pigs are raised in very close proximity to each other.[13,14] Airborne transmission through the aerosols produced by pigs coughing or sneezing is also an important means of infection. The virus usually spreads quickly through a herd, infecting all the pigs within just a few days. Transmission may also

occur through wild animals, such as wild boar, which can spread the disease between farms.[15]

2. Transmission to Humans

Flu viruses are made up of tiny particles that can be spread through the droplets that come out of nose and mouth when someone cough or sneeze. When anybody cough or sneeze without covering their nose and mouth with a tissue, those droplets can spread and others will be at risk of breathing them in. If someone cough or sneeze into one's hand, those droplets and the germs in them are then easily spread from his hand to any hard surfaces that that person touch, and they can live on those surfaces for some time. If other people touch these surfaces and then touch their faces, the germs can enter their systems and they can become infected. That's how all cold and flu viruses, including swine flu, are passed on from person to person.[16,17]

CLASSIFICATION

The three genera of influenza viruses that cause human flu, two also cause influenza in pigs, with influenza -A being common in pigs and influenza -C being rare. Influenza - B has not been reported in pigs. Within influenza - A and influenza -C, the strains found in pigs and humans are largely distinct, although due to ressortment there have been transfers of genes among strains crossing swine, avian and human species boundaries.[18]

INCUBATION PERIOD OF SWINE FLU

Every virus, bacteria or pathogen of any time has a certain incubation period. This period is the time it takes after the pathogen enters the body, for the symptoms to appear. Like all influenza pathogens average incubation period is two days. However, studies have shown individual periods to range between one day to seven days, over all. As such, there is quite a dispute all over the world about the incubation period. Most US cases have shown the incubation period to be between two to seven days.[19]

PATHOGENESIS

The primary event after transmission of the virus is the invasion of the respiratory epithelium after an incubation period which varies from 1 to 7 days.[20]

The histopathological changes which were observed included epithelial cells damage, airway plugging and peribronchial and perivascular mononuclear cell infiltration.[21]

These sites of epithelial damage are often super infected with bacteria, but severe lung damage can be caused by the virus per se. After the initial illness, the host usually mounts an immune response which involves a rise in antibody titers as well as T cell activation. The production of interferon in the respiratory mucosa is associated with a fall in virus shedding.[22]

The virus is shed for an average duration of a week (starting from 1 day before to 7 days after the onset of illness). In children the duration of virus shedding is often longer, up to 2 weeks.[20]

In *Ayurveda*, it may be defined as *vata-kaphaj jwar*.

Correlation between vata-kaphaj jwar and swine flu.

Vata-kaphaj jwar	***Swine flu***
TAAP(FEVER)	A sudden fever -100 degrees F or above
ARUCHI	Anorexia
PARVA VEDHNA	Tiredness and joint pain
SHIROVEDHNA	Headache
PINUS	Runny or stuffy nose
SHVASHA ADIKYA	*Rapid breathing*
KAAS	Cough and sneezing
VIBHANDH	Constipation
SHITH	Chills
JAADHYA	Aching muscles and joints(Myalgia)
BHRAM	Loss of counsiousness
TANDRA	nap
	Loss of appetite
	Diarrhea or stomach upset(23)

DIAGNOSIS

For diagnosis of swine flu influenza A infection, respiratory specimen (nasopharyngeal swab, throat swab nasal aspirate, nasal washing) would generally need to be collected within the first 4 to 5 days of illness (when an infected person is most likely to be shedding virus). Most of the tests can distinguish between A and B types. The test can be negative (no H1N1 infection) or positive for type A and B. If the test is positive for type B, the flu is not likely to be swine influenza (H1N1). If it is positive for type A, the person could have conventional influenza strain or swine influenza (H1N1).[24]

TESTS

The major tests that are being used for the diagnosis of Swine-Flu are:

- Nasopharyngeal swab for viral culture
- The gold standard test
- Typing using haem
- Aggultination inhibition and immunofluroscence
- Rapid immune fluorescence test
- Viral culture
- Real-time Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR)

Usually, a quick test (for example, nasopharyngeal swab sample) is done to see if the patient is infected with influenza A or B virus. If the test is positive for type B, the flu is not likely to be Swine-Flu (H1N1). If it is positive for type A, the person could have a conventional flu strain or Swine-Flu (H1N1). The current protocols (As per WHO guidelines revised on 23 November, 2009) are available for testing and detection of virus.[25]

AYURVEDA PROSPECTIVE

We can correlate symptoms of Swine flu with "*Vatakaphaj Jwar",* mentioned in *Ayurveda*. Pathology of *Jwar* (Fever) as result of *"Agnimandya"* and accumulation of *"Aam"* in the body; which causes imbalance of the *Doshas.* The predominance of *Vata* and *Kapha Dosha* at the end of winter and beginning of summer i.e. the *Ritu sandhi kaal* (transit season) lowers down the immune system of the body and makes the conditions favorable for the spread of the disease.

"Taaphani aruchi parva shiroruk peenas shwas kaas
vibandha sheet bhram tandra shleshmavaatjanit jwar lingam||" va.ni.6/25

Fig.1 Withania Somnifera

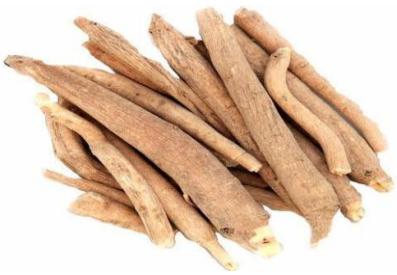

Fig.1(1) Roots Of Withania

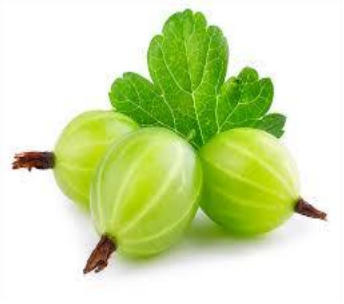

***Fig.2* Emblica Officinalis**

Fig. 3 **Phyllanths Niruri**

Fig. 4 *Allium Sativum*

Fig.5 **Ocimum Sanctum**

Fig.6 Tinospora Cordifolia

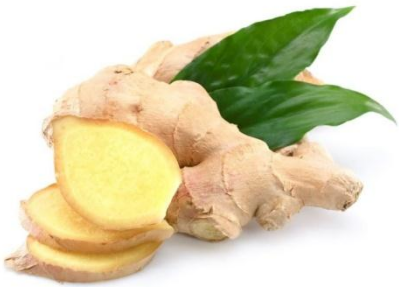

Fig.7 Zingiber Officinale

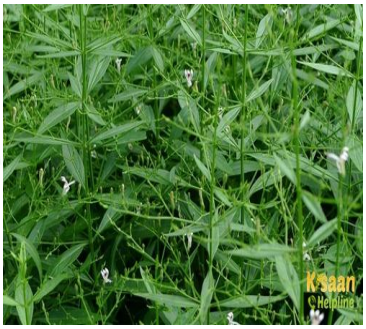

Fig.8 Andrographis Paniculata

Fig.9 Commiphora Wightii

Fig.9(1) Resin Of Guggulu

Fig. 10 Mentha Piperita

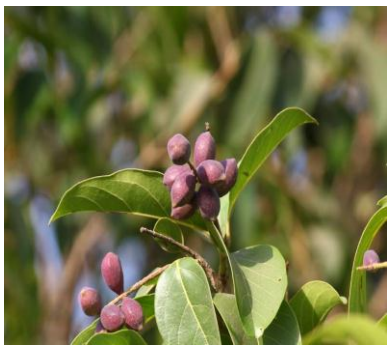

Fig.11 Terminalia Chebula

Fig. 12 Curcuma Long **Fig. 13 Glycyrrhzia Glabra**

HERBAL POTENTIAL AGAINST H1N1 FLU

Table 1

s.no.	Name Of Drug	Latin Name	Family	Chemical Composition	Useful Part	Pharmacological Action
1.	*Tulsi*	Ocimum sanctum [Fig.5]	Lamiaceae	oleanolic acid, ursolic acid, rosmarinic acid, eugenol carvacrol, linalool, and β caryophyllene	Whole plant	**anti-viral** activities, antimicrobial,anti-hyperlipidemic, anti-tumor, hepatoprotective, anti inflammatory, anti-ulcer,
2.	*Ginger*	Zingiber officinale [Fig.7]	Zingiberaceae	allicin, alliin	Rhizome	**Anti viral**,anti-nausea andAnti-inflammatory properties
3.	*Garlic*	Alium sativum [Fig. 4]	Liliaceae	Alliacea ajoene,	Rhizome,Oil	**antiviral,** anti-inflammatory, antibacterial, and immune-boosting properties
4.	*Amalaki*	Emblica officinalis [Fig.2]	Euphorbiaceae	Gallic acid,tannic acid,ascorbic acid, emblicanin a&b,ellagic acid,puniglucanin	fruit, seed, leaves, root, bark, and flowers,	**Anti viral activity**, Immune-boosting
5.	*Giloy*	Tinospora cordifolia [Fig.6]	Menispermaceae	tinosporone, tinosporic acid, alkaloid, berberine, Giloin, crude Giloininand	Stem	immunomodulatory Anti-periodic, **Anti-pyretic,** Alterative, Diuretic, anti-inflammatory property
6.	*Mulethi (Licorice)*	Glycyrrhia glabra [Fig.13]	Papilionaceae	Glycyrrhizic acid, glycosides,coumarin , and cinnamic acid	Root	**Antiviral activity** anti-inflammatory, antioxidant, and immune-modulating

						activities
7.	*Bhumyamlaki*	Phyllanths niruri [Fig.3]	Euphorbiaceae	Niranthin, nirtetralin, Phyteralin, Flavanoids, sterols, alkaloids	Whole plant	**Antiviral,**antifungal, hypoglycemic action,**antioxidant,antimicrobial**,anti inflammatory
8.	*Kalmegh*	Andrographis paniculata [Fig.8]	Acanthaceae	Andrographolide	Whole plant	Anti - inflammatory, **antipyretic, antiviral,** and **immunostimulatory** properties
9.	*Aswagandha*	Withania somnifera [Fig.1 and1 (1)]	Solanaceae	Anaferine, anahygrine, beta-sisterol, chlorogenic acid, cysteine, cuscohygrine, pseudotropine, scopoletin, somniferinine, withaferin A, withanine, withananine, and withanolides	Root	Stimulant for the immune system, also a very potent adaptogen.
10.	*Haridra (turmaric)*	Curcuma longa [Fig.12]	Zingiberaceae	Curcumin	Rhizome	**antioxidant,** anti-inflammatory properties
11.	*Pudina*	Mentha piperita [Fig.10]	Labiatae	limonene, pulegone, caryophyllene and pinene	Whole plant	**Anti viral activity**
12.	*Haritaki*	Terminalia chebula [Fig.11]	Combretaceae	Chebulic acid, chebulanin, tannin corilagin, Chebulegic acid, chebulinic acid	Fruit	**inflammatory, anthelmentic, cardiotonic**, aphrodisiac, and restorative properties
13.	*Gugglu*	Commiphora wightii [Fig.9&9(1)]	Burseraceae	diterpenoids, triterpenoids, steroids, long-chain aliphatic tetrols	Gum	**Anti viral,antibacterial**

PREVENTION

If you're *agn*i (digestive fire) is normal, your *vyadhiksamatva* (immunity) will remain strong and thus no infection can cause great harm. Prevention of swine influenza has three components:

- Prevention in swine,

- Prevention of transmission to humans,
- Prevention of its spread among humans

Swine flu cannot be spread by pork products, since the virus is not transmitted through food but it spreads between humans through coughing or sneezing and people touching something with the virus on it and then touching their own nose or mouth. As soon as you feel discomfort with symptoms like sneezing, coughing and any other respiratory symptoms start to have herbal tea like *Kapha* tea, cold soothe tea etc. Maintaining healthy lung capacity and immunity in general will help to combat any infections from viruses.

Common Sense "Do's"

- Frequent washing of hands with soap and water or with alcohol-based hand sanitizers, especially after being out in public. The possibility of transmission is also reduced by disinfecting household surfaces.
- Experts agree that hand-washing can help prevent viral infections, including ordinary influenza and the swine flu virus.
- Influenza can spread in coughs or sneezes. Telephones and other surfaces and be transferred via the fingers to the mouth, nose or eyes.
- Anyone with flu-like symptoms such as a sudden fever, cough or muscle aches should stay away from work or public transportation and should contact a doctor for advice.
- One should avoid sleeping during the day hours.
- Clean and dry clothes should be worn.
- Try to avoid over exertion.
- Drink a glass of water with two teaspoons of honey every day early in the morning.
- Always have fresh meals and not leftovers, prepared using a minimum quantity of oil.
- Include fresh fruits and vegetables in the diet
- Always consume warm food.

Common Sense "Do nots"

- Avoid the regular use of sweets (especially chocolate), butter, cheese, *paneer* etc. • Avoid dairy products especially curds and butter. • Avoid foods containing preservatives, artificial flavors, colors etc.[26]

CONCLUSION

From the time immemorial, plants have been widely used as curative agent for variety of ailments. In *Ayurveda*, on the basis of its clinical picture it can be co-related with *vata-kaphaj jwar*, and for which much emphasis is given in prevention, control and treatment of it. In the present article, the herbs for prevention and management of swine flu are described in summary. These herbs may be very useful and relieve the symptoms. Because of early diagnosis is not possible so it may be quite useful in preventive measures. The whole world eyeing towards the traditional medicine systems like ayurveda, sidhha, Chinese TSM for prevention and cure for endemic diseases.

REFERENCES

1. Wiwanitkit V. Swine Flu: The Present Pandemic Infectious Disease. Kulak Burun Bogaz Ihtis Derg., 2009; 19(2): 57-61.
2. Swine influenza. The Merck Veterinary Manual. 2008. ISBN 1442167424.
3. http://www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/121407.htm. Retrieved April 30, 2009.
4. TET-HSE@technip.com (Date-22sep,2010)
5. C. Buchen-Osmond, Ed., "ICTVdB Virus Description—00.046.0.04. Influenzavirus B". ICTVdB—The Universal Virus Database, Version 4, vol. 142, Columbia University, New York, NY, USA, 1997.
6. R. A. Lamb and P. W. Choppin, "The gene structure and repli-cation of influenza virus,"Annual Review of Biochemistry, vol.52, pp. 467–506, 1983.
7. Christman MC, Kedwaii A, Xu J, Donis RO, Lu G. Pandemic (H1N1) 2009 virus revisited: an evolutionary retrospective. Infect Genet Evol. 2011; 11: 803-811.
8. J. S. Malik Peiris, L. L. M. Poon, and Y. Guan, "Emergence of a novel swine-origin influenza A virus (S-OIV) H1N1 virus in humans," Journal of Clinical Virology, 2009; 45(3): 169–173.
9. D. Gatherer, "The 2009 H1N1 influenza outbreak in its histo-rical context,"Journal of Clinical Virology, 2009; 45(3): 174–178.
10. G. Neumann, T. Noda, and Y. Kawaoka, "Emergence and pandemic potential of swine-origin H1N1 influenza virus," Nature, 2009; 459(7249): 931–939.
11. M. Michaelis, H. W. Doerr, and J. Cinatl, "Novel swine-origin influenza A virus in humans: another pandemic knocking at the door," Medical Microbiology and Immunology, 2009; 198(3): 175–183.

12. Carter RW, Sanford JC. A new look at an old virus: patterns of mutation accumulation in the human H1N1 influenza virus since 1918. Theor Biol Med Model. 2012; 9: 42.
13. *Kothalawala H, Toussaint MJ, Gruys E (June 2006). "An overview of swine influenza". Vet Q.* ***28****(2): 46–53. PMID 16841566. doi:10.1080/01652176.2006.9695207*
14. *Gilchrist MJ, Greko C, Wallinga DB, Beran GW, Riley DG, Thorne PS (February 2007). "The Potential Role of Concentrated Animal Feeding Operations in Infectious Disease Epidemics and Antibiotic Resistance". Environmental Health Perspectives.* ***115****(2): 313–6. PMC 1817683. PMID 17384785. doi:10.1289/ehp.8837.*
15. *Saenz RA, Hethcote HW, Gray GC (2006). "Confined Animal Feeding Operations as Amplifiers of Influenza". Vector-Borne and Zoonotic Diseases.* ***6****(4): 338–46. PMC 2042988. PMID 17187567. doi:10.1089/vbz.2006.6.338*
16. Vicente J, Leon-vizcaino L, Gortazar C, Jose Cubero M, Gonzalez M, Martin-atance P., Antibodies to selected viral and bacterial patho- gens in European wild boars from southcentral Spain. J wildlife diseases., 2002, 38: 649.
17. Department of health, social services and public safety (DHSSPS)
18. See the link for this information www.direct.gov.uk/swineflu (date-15oct,2010)
19. Kothalawala, H., M.J. Toussaint and E. Gruys,. An Overview of Swine Influenza, 2006; 28; 46-53.
20. 19.http://www.buzzle.com/articles/swine-flu-natural-remedies-herbal-remedies-for-swine-flu.html
21. Ministry of Health and Family Welfare, Government of India. Swine Flu- Clinical Management Protocol and Infection Control Guidelines. http://mohfw.nic.in/Clinical%20Management-Swine%20Flu.doc
22. Sreta D, Kedkovid R, Tuamsang S, Kitikoon P, Thanawongnuwech R. Pathogenesis of swine influenza virus(Thai isolates) in weanling pigs: an experimental trial. Virology J 2009; 6: 34.
23. Dolin R. Influenza. In, Kasper DL, Braunwald E, Fauci AS, Hauser SL, Longo DL, Jameson LJ (Eds). Harrisson's principles of internal medicine. McGraw Hill 2005. Pp 1066 – 1070.
24. Ginsberg M, Hopkins J, Maroufi A. Swine influenza A (H1N1) infection in two children – Southern California, MMWR Recomm Rep 2009; 58: 400 –402.
25. CDC H1N1 Flu | H1N1 Flu and You". Cdc.gov. http://www.cdc.gov/H1N1flu/qa.htm

26. World Health Organization, WHO Information for laboratory diagnosis for pandemic (H1N1) Virus in humans 2009-revised http:/www.WHO.int/csr/publication/swine flu/realtimeptpcr/index/en/html
27. Jupiter Medical Center *at* The Calcagnini Center for Mindfulness 1210 S. Old Dixie Highway Jupiter, Florida 33458.