

Viral Diseases and Antiviral Activity of Some Medicinal Plants with Special Reference to Ajmer

Rashmi Sharma*

Department of Zoology, SPCGA, Maharshi Dayanand Saraswati University, Ajmer, Rajasthan, India

ABSTRACT

Rajasthan is western state of India. Ajmer is located in the centre of Rajasthan (INDIA) between 25° 38" and 26° 58" north 75° 22" east longitude covering a geographical area of about 8481 sq. km hemmed in all sides by Aravalli hills. About 7 miles from the city is Pushkar Lake created by the touch of Lord Brahma. The Dargah of Khawaja Moinuddin chisti is holiest shrine next to Mecca in the world. Rajasthan has hot dry summer and cold bracing winter. The winter extends from November to February and summer extends from March to June followed by rainy season till mid-September. The temperature varies from 2°C in winter and 49°C in summer. The normal annual rainfall is 527.3 mm. Ajmer viral disease and antiviral plants are studied in this paper.

Keywords: Viral disease; Causative agent; Genome type

INTRODUCTION

A viral disease (infection) occurs when an organism's body is invaded by pathogenic viruses and infectious virus particles (virions) attach and enter susceptible cells [1-10]. Basic structural characters of the same family are same such as genome type, shape of virus replication site. There are 21 families which cause disease in humans. 5 families are ds DNA, 3 are nonenveloped (Adenoviridae, Papillomaviridae and Polyomaviridae) and 2 are enveloped (Herpesviridae and Poxviridae). 1 family is partly dsDNA Hepadnaviridae, enveloped. 7 families are ssRNA of which 3 are nonenveloped (Astroviridae, Caliciviridae and Picornaviridae) and 4 enveloped (Coronaviridae, Flaviviridae, Retroviridae and Togaviridae). All nonenveloped families have icosahedral nucleocapsids. 6 negative ssRNA families (Arenaviridae, Bunyaviridae, Filoviridae, Orthomyxoviridae, Paramyxoviridae, Rhabdoviridae, enveloped with helical nucleocapsid. 1 dsRNA Reoviridae. 1 add (Hepatitis D) not assigned.

COMMONLY OCCURRING VIRAL DISEASES

The viral diseases which commonly occur in Ajmer are:

Dengue (Breakbone fever) (*Flaviviridae*)

Mosquito-borne tropical disease caused by dengue virus.

Positive ssRNA enveloped.

Symptoms include fever, headache, muscle pain, joint pain, and characteristic skin rash similar to measles. It can be life-threatening dengue hemorrhagic fever, resulting in bleeding, low level of blood platelets and blood plasma leakage. In dengue shock syndrome dangerously low BP occurs. Transmission by mosquito *Aedes aegypti*.

Herpes

ds DNA, enveloped.

Transmission by direct contact,

Treatment by *zoster varicella* (acyclovir).

Diagnosis by cell culture.

Few cases were recorded.

Influenza (*Family Orthomyxoviridae*)

Negative ss RNA enveloped with helical nucleocapsid.

Occur by droplet contact. Treatment is by Amantadine, Rimantadine, Zanamivir, Oseltamivir. Prevention is by hand washing, mouth covering, while coughing, sneezing, avoiding close contact.

More than 300 cases occurred last year.

Correspondence to: Rashmi Sharma, Department of Zoology, SPCGA, Maharshi Dayanand Saraswati University, Ajmer, Rajasthan, India, Tel: +918949593913; E-mail: sharmarashmigca@gmail.com

Received: September 10, 2019; **Accepted:** September 17, 2019; **Published:** September 25, 2019

Citation: Sharma R (2019) Viral Diseases and Antiviral Activity of Some Medicinal Plants with Special Reference to Ajmer. J Antivir Antiretrovir. 11:183. DOI: 10.35248/1948-5964.19.11.186

Copyright: © 2019 Sharma R, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

AIDS (Family *Retroviridae*)

SsRNA positive sense. Transmission is by sexual contact, blood, breast milk, Treatment HAART.

Prevention by avoiding shared needles, safe sex.

Diagnosis by antibody detection, p24, nucleic acids.

Sporadic cases, Cases are reducing.

Measles (*Paramyxoviridae*)

ssRNA negative sense.

Transmission by droplet contact, Treatment none, Prevention by vaccines and avoiding contact.

Diagnosis by antibody detection.

Cases are not very large in number.

Mumps (Family *Paramyxoviridae*)

SsRNA.

Transmission by droplet contact.

Treatment none, Prevention vaccine and avoiding close contact.

Some cases were registered.

Chickenpox (Family *Herpesviridae*)

ds DNA, enveloped.

Transmission by direct contact.

Treatment by *Zoster varicella* (Acyclovir).

Diagnosis by cell culture.

Few cases were recorded.

Gastroenteritis (*Adenoviridae*)

ds DNA.

Transmission by Droplet contact fecal Oral.

Treatment none, prevention by vaccine diagnosis ELISA.

Few cases recorded.

Pneumonia (*Paramyxoviridae*)

SsRNA.

Transmission by droplet contact,

Treatment none, prevention by vaccine, diagnosis antibody detection. Some cases were registered.

All viral diseases occur during changing seasons i.e. March and September.

Chikungunia (CHIKV)

Alphavirus ssRNA positive sense.

Chikungunya infection caused by chikungunya virus. 2-4 days after exposure fever occurs which last 2-7 days accompanying joint pain. Mortality rate is 1 in 1000.

Virus is passed to humans by *Aedes aegypti*.

Before seven years more than 500 cases were recorded.

Chamki fever (AES) (Acute Encephalitis Syndrome)

Chamki fever is given local name. It is Acute viral encephalitis Syndrome. Causative agent is Herpes virus, Japanese virus, Zika virus, but causative agent can also be bacteria, fungus, parasite, chemical or toxin seasonal and geographical orientation is there in causative organism. It is endemic to gangetic planes. More than 100 children died in Muzaffarpur, East Champaran, Vaishali, and neighbouring places in Bihar. It is rare and serious disease. Most of casualties occurred between 1-10 age group children. It attacks people with weakened immune system and history of visiting litchi orchard (Children eating unripe litchi empty stomach). The disease occur during April to June, It affects central nervous system, Characterized by fever, vomiting, headache, sensitivity to light, stiff neck and back, nausea, problem with speech, hearing, Hallucination, memory loss, drowsiness, weakness, disorientation, delirium, seizure, confusion, coma, paralysis, personality change etc. Japanese encephalitis vaccines are given for age of 9 months, and 2nd with DPT booster at the age of 16-24 months.

CCHF (Crimean Congo Hemorrhagic Fever)

CCHF is viral disease (belong to family Nairoviridae of RNA viruses) can cause fever, headache, muscle pain, diarrhea, vomiting, black stool, and bleeding into skin, mood instability, agitation, Confusion, kidney failure, shock, Acute respiratory distress syndrome (ARDS), liver failure.

25%-30% cases death occurs. After 2015 Cases registered in western Gujrat and Rajasthan (Figure 1). CCHF is spread by tick (*Hylomma* tick) bites or contact with livestock. Treated with Ribavirin.

Antiviral activity of some medicinal plants:

Garlic (*Alium sativum*) belongs to family Amaryllidaceae.

Active compound is Allin sulphur containing compound present in Garlic.

It is antiviral due to presence of Allin.

Cinnamon (*Cinnamomum zeylanicum*) belongs to family Lauraceae.

Spice is obtained from inner bark.

It has high nutritional value.

**Geographical identification of Ajmer**

Figure 1: Geographical identification of the area Rajasthan.

Component is cinnamaldehyde and eugenol.

Syzygium aromaticum belongs to family Myrtaceae.

Flower buds are dried and used as spice.

Flower bud has antiviral properties active component is eugenol.

Ginger (Zingiber officinale) belongs to family Zingiberaceae.

Rhizome is used as spice and also have medicinal values antimicrobial.

Curcuma longa belongs to family Zingiberaceae.

Rhizome is dried, powdered and used as spice and also used as medicine.

Piper longum also known as pipli, belong to family piperaceae.

Fruit is dried and used as spice and seasoning and medicine.

Some plants have Ribosomal Inactivating Proteins (RIP) and are able to insulate against Viral infection.

Phytolacca americana contains Pokeweed antiviral protein (PAP), *Mirabilis jalapa* contains Mirabilis antiviral protein (MAP).

Dianthus caryophyllus contains Carnation antiviral protein (Dianthus) (CAP), *Phytolacca* genus have several RIPs.

PAP is very powerful against all type of viruses.

PAP can stop transmission of all viruses, even minimum concentration.

Mirabilis jalapa root, leaf, stem inhibit effect of plant virus activity. Extract sprayed 24 hours before virus inoculation stop virus symptoms.

Mirabilis Jalapa also controls aphid and white fly population.

Transmission of TMV (Tobaco Mosaic Virus) and PVY (Potato virus) controlled by MAP (Mirabilis antiviral Protein).

CONCLUSION

12 Microbial diseases were observed out of which Influenza and

AES were prominent. *Syzygium aromaticum* and *Zingiber officinale* were effective antiviral medicine in most viral diseases.

SUMMARY

The 12 viral diseases were prominent and *Syzygium aromaticum* and *Zingiber officinale* were effective antiviral medicine in most viral diseases.

REFERENCES

1. Dengue Guidelines for Diagnosis, Treatment, Prevention and Control, Geneva. World Health Organization WHO. ISBN. 2009; pp: 154787-154791.
2. Taylor MP, Kobilier O, Enguist LW. Alphaherpes virus axon to cell spread involves limited virion transmission. Proc Natl Acad Sci USA. 2012; 109(42): 17046-17051.
3. Hunt M. "Arboviruses" University of South Carolina School of Medicine. Viral Fever Web Health cenlone.
4. Artenstein AW, Grabenstein JD. Smallpox vaccines for biodefence need and feasibility. Expert Rev Vaccines. 2008; 7(8): 1225-1237.
5. Van Regenmortel MH, Mahy BW. Emerging issues in virus taxonomy. Emerg Infect Dis. 2004; 10(1): 8-13.
6. International Committee on Taxonomy of viruses and the 3,142 unassigned species. Virol J. 2005; 2: 64.
7. Baltimore D. The strategy of RNA Viruses. Harvey Lectures. 1974; 70: 57-74.
8. ICTV Virus Taxonomy Release History.
9. Jordan MC, Jordan GW, Stevens JG, Milles G. Latent Herpes virus in humans. Ann Intern Med. 1984; 100 (6): 866-880.
10. Parker MT. An ecological framework of human Virone Provedes Classification of current knowledge and Identities Area of forthcoming Discovery. Yale J Biol Med. 2016; 89(3): 339-351.