ISSN 0189-0514
J. Anim. Prod. Res. (2017) 29(2):289-293

National Animal Production Research Institute
Ahmadu Bello University
P.M.B 1096, Shika-Zaria,
Kaduna State, Nigeria.
Email:japr@napri.gov.ng Url:journals.napri.gov.ng

ANTIBODY DETECTION IN SUSPECTED CARRIERS OF AFRICAN SWINE FEVER VIRUS IN TARKA LOCAL GOVERNMENT AREA OF BENUE STATE, NIGERIA

***[1]Adenaike, E. A., [2]Tekdek. L. B., [3]Kazeem. H. M., and [4]Simon A. Y.**
**[1]Department of Veterinary Medicine, ,Michael Okpara University of Agriculture, Umudike, Umuahia, Abia State.*
[2]Department of Veterinary Medicine, Ahmadu Bello University, Zaria, Kaduna State
[3]Department of Veterinary Mcrobiology Ahmadu Bello University, Zaria, Kaduna State
[4]Veterinary Teaching Hospital, Ahmadu Bello University, Zaria, Kaduna State
**Correspondence: E-mail: adenaikelara@yahoo.com Tel: 08026580689*

ABSTRACT

Studies were undertaken to investigate the presence of antibody against African Swine Fever Virus (ASFV) among pig population in Tarka local government area (LGA) Benue state. Ten serum sample were obtained from ten different suspected pigs from the pig population in Tarka LGA of Benue state of Nigeria were tested by indirect Enzyme-linked immunosorbent assays (ELISA).One sample (10%) tested positive while 9(90%) tested negative for the test. Since pigs with demonstrable antibody should be considered as chronic carriers of the virus because it is doubtful if true recovery ever occurred. Control measures such as use of biosecurity, test and slaughter of animals that tested positive for ASF antibody .

Keywords: African swine fever, Antibody, serum Tarka, Benue State.

INTRODUCTION

African swine fever (ASF) is a notifiable, lethal hemorrhagic disease of domestic pigs (Rahimi *et, al;* 2010). It is a devastating viral disease currently threatening the pig industry worldwide (Ayoade and Adeyemi, 2003). The disease is caused by African swine fever virus (ASFV) which is an enveloped double stranded deoxyribonucleic acid (DNA) virus belonging to genus. *Asfivirus* (Sarma, 2012). The virus can also be acquired through ingestion of contaminated feed (Rahimi *et, al;* 2010). Different strains of ASFV vary in their ability to cause disease, but there is one serotype of the virus detectable by blood antibody test (EU, 2010). It a member of the family *Asfaviridae* and is a double stranded DNA virus that measures 200-220nm in diameter. (Ekwe and Wilkinson, 2000). The DNA of the virus is circular and has 170-190 kbp, nucleoprotein core surrounded by an icosahedral sheet and possesses an outer envelope. The viral genome codes for about 34 structural protein and some nonstructural proteins (Ekwe and Wilkinson, 2000, Sarma, 2012). The virus survives in chilled carcasses or in frozen meat for several weeks (Merchant and Parker, 2005). In uncooked products, such as dried sausage and ham the virus can persist for 3 to 6 months. The virus can be viable in garbage containing meat scraps that have not been heated to 65^{o}C for 1 hr. The family is sensitive to lipid solvents and can be inactivated rapidly by 2% NaOH (Sarma, 2012).

Benue State in middle belt Nigeria re-known for swine production. It is important to assess the ASF status of pigs in the area so that control and preventive measures can be taken in order to ensure a healthy pig population .There is dearth of information on ASF

antibody status in pigs production is affected by ASF in Benue state

MATERIALS AND METHODS

Study Area

The study area for this study was Tar**k**a Local Governments Area (LGA) in Benue State of is situated in 7^{o} 2' north and 8.8^{o}east,. The global location of Benue state is between Longitude 06^{o} and 11^{o} 3' north of the equator. (Dada et al., 2010)

Blood samples were collected from pig population from both commercially managed and traditionally managed pigs whiten Tar**k**a LGA

Activity before the collection of samples for analysis

The following were taken from live animals or before animals are slaughtered: The breed or breed trait and sex of each animal were recorded; the weights of the animals were taken mostly with the use of weighing band which gave more than 97% accuracy of the animal weights. The body of each animal was carefully examined with magnifying glass or hand lens for any lesion on the skin and to see if there were any ectoparasites (eg Mites or tick).

Sample collection

Ten blood samples (5 to 10 mls) from ten different suspected pigs from population of pigs clinically tested from Tarka LGA of Benue state of Nigeria. The blood was collected mainly from live animals through the jugular vein in two different tubes for each animal (one tube containing anticoagulant and vacuatainer tube without anticoagulant. All the samples collected were placed in a cooler and covered with ice pack.

Antibody detection test

The detection of antibody against ASF was carried out by indirect Enzyme-linked immunosorbent assays (ELISA) as recommended by the manufacturer (IDvet,310, rue Louis Pasteur-Grabels-FRANCE) who were also the supplier of the kits used for the detection of anti-African Swine fever antibodies in porcine serum and plasma samples or blood filter samples.

Serum samples

	No Ag 1	**Ag 2**	**No Ag 3**	**Ag 4**	**No Ag 5**	**Ag 6**	**No Ag 7**	**Ag 8**	**No Ag 9**	**Ag 10**	**No Ag 11**	**Ag 12**
A	NC	NC	S5	S5	S13	S13	S21	S21	S29	S29	S37	S37
B	NC	NC	S6	S6	S14	S14	S22	S22	S30	S30	S38	S38
C	PC	PC	S7	S7	S15	S15	S23	S23	S31	S31	S39	S39
D	PC	PC	S8	S8	S16	S16	S24	S24	S32	S32	S40	S40
E	S1	S1	S9	S9	S17	S17	S25	S25	S33	S33	S41	S41
F	S2	S2	S10	S10	S18	S18	S26	S26	S34	S34	S42	S42
G	S3	S3	S11	S11	S19	S19	S27	S27	S35	S35	S43	S43
H	S4	S4	S12	S12	S20	S20	S28	S28	S36	S36	S44	S44

Figure 1. Showing plate map. Samples above are deposited in duplicate in adjacent even and odd- numbered wells. No Ag=Uncoated well Ag=Coated well, NC=Negative control, PC = Positive control, S= sample

The following were added as instructed by the manufacturer of the kits.

100 ul of Dilution Buffer 14 to each well.10 ul of the negative control to wells A1, B1 and A2, and B2,

10 ul of the positive control to wells C1, D1 and C2, D2.10ul of each sample to be tested to the remaining wells. Each sample was deposited twice (adjacently in even and odd-numbered wells)
It was later incubated for 45 min at 21^{o} C ($\pm$ 5^{o}C) The wells were emptied and washed 3 times with approximately 300 ul of washed solution. Drying of the wells was avoided during washing.

Validation
O.D result was calculated as follows

O.D net = O.D even well - O.D odd well

Any OD value that is negative, the sample was given O.D net as value of Zero

Interpretation
well- O.D result was calculated as follows

O.D net = O.D even- O.D odd well

S/P percentage (S/p%) was calculated

$$S/P\% = \frac{\text{Net OD sample}}{\text{net OD PC}} \text{ X100}$$

Samples with a S/p%

With less than or equal to 50% are considered negative (-VE).

Less than 60% and greater than 50% are considered doubtful (D).

Greater than or equal to 60% are considered positive (+VE)

RESULT

Reactions of antigen –antibody in the wells of ELISA plates
Antigen-antibody conjugate complexes was formed in wells where horseradish peroxidase (HRP) conjugate fixed as ASF antibodies and this was shown by blue coloration (Figure 2) that became yellow after addition of the stop solution **(**Figure 3**)**. In wells where there was no antigen- antibody, no coloration appeared.

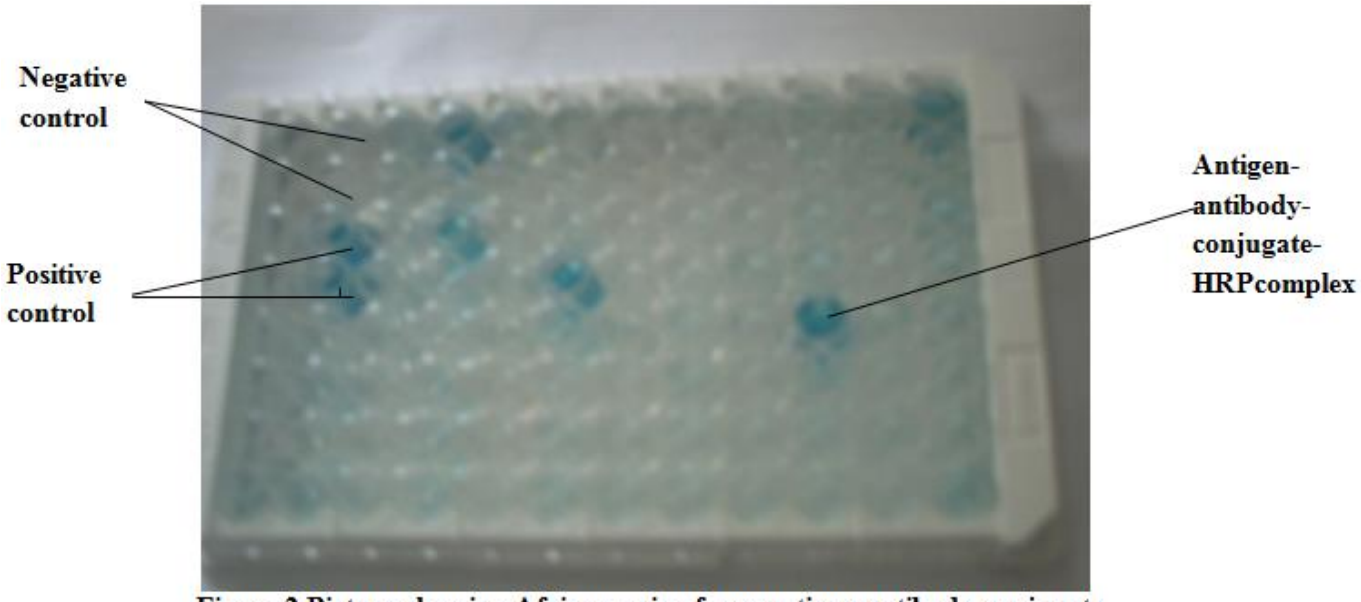


Figure 2.Picture showing African swine fever antigen-antibody-conjugate -HRP complex which is shown (above) by blue coloration.

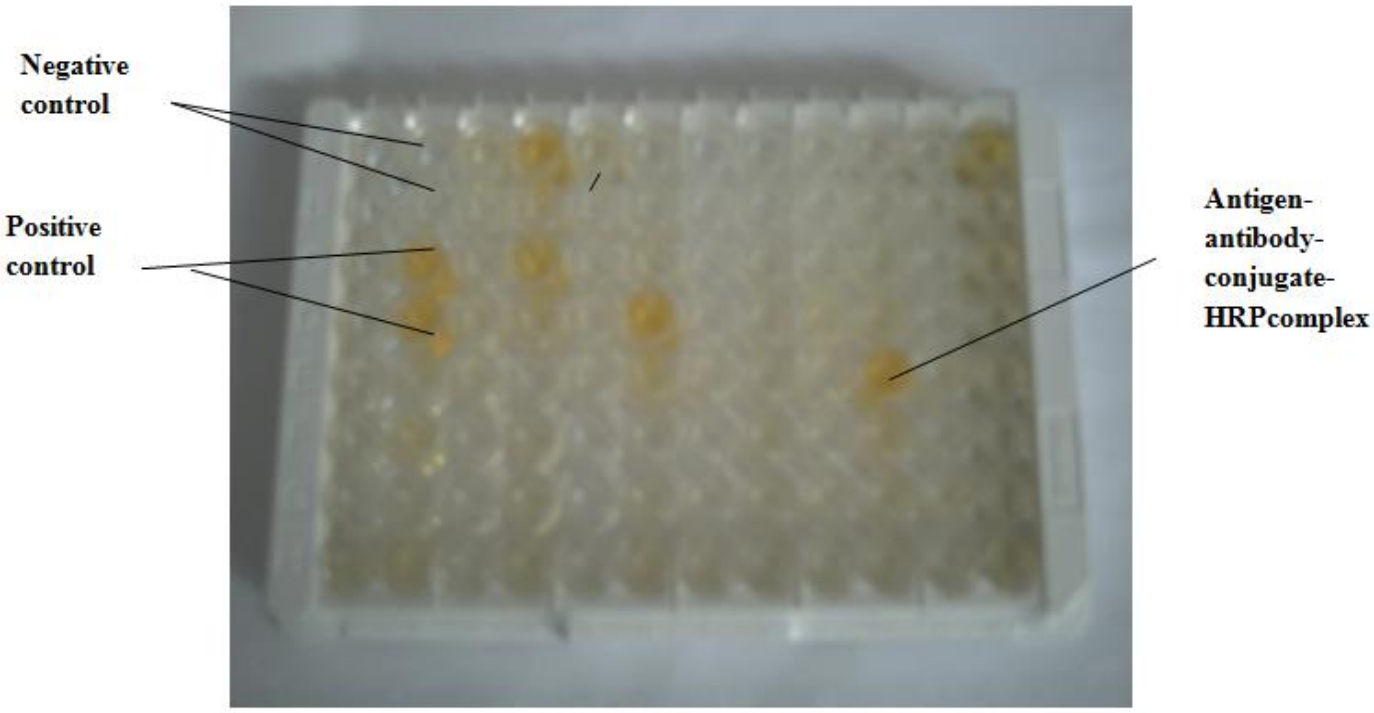


Figure 3.Picture showing presence of African swine fever antibodies, the blue coloration which became yellow after addition of the stop solution.

The microplate was read at 450nm.The ELISA recorder and computer helped in recording, and resul

Table 1: Showing the information about the animals from Tarka Local Government area and the S/P% calculated from ELISA result Table I : Showing the

S/N	Sex	Weight in KG	Breed Trait	S/P%	ASF antibodies
1	**F**	**55**	**CRS**	**46.85**	**-**
2	**F**	**50**	**LC**	**90.630**	**+**
3	**M**	**45**	**LW**	**17.824**	**-**
4	**M**	**55**	**LW**	**7.754**	
5	**M**	**60**	**Lw**	**8.724**	
6	**M**	**65**	**Local**	**7.054**	
7	**F**	**45**	**LW**	**10.501**	
8	**F**	**40**	**LW**	**6.947**	
9	**M**	**50**	**LW**	**10.232**	
10	**F**	**45**	**LW**	**8.993**	

LW: Large white LC: Local breeds CRS: cross breed

DISCUSSION

The results obtained showed that from the total number of 10 blood serum samples of pigs that was collected from Tarka LGA of Benue state of Nigeria, 1 (10%) tested positive and 9 (90 %) tested negative for the indirect ELISA.

Since according to Radostits *et, al*; (2007), that pigs with demonstrable antibody should be considered as chronic carriers of the virus as it is doubtful that true recovery ever occurs .This means that 10% were chronic carriers of ASF virus..

African swine fever has been described by Rahimi *et, al*; (2010) (ASF) as a notifiable, highly lethal hemorrh population in the area and could impact on economy of the pig owners and on animal protein consumption.

CONCLUSION

This study has shown that ASF antibodies is present in pig in Tarka LGA of Benue state of Nigeria and this has confirmed the carrier status of the pigs in the local government area

RECOMMENDATIONS

Sera of pigs should be tested for ASF antibodies by ELISA method and the following action should be carried out:

1) Biosecurity measures such as control of personnel from other pig farms, visitors, butchers and provision of foot deep .
2) Prohibition of movement of pigs from one part of the country to another that is free of the disease unless the animals are confirmed by veterinarians to be free from the virus.
3) Contaminated pig pens should be disinfected with strong solution of caustic soda 4 months before animals are reintroduced .since the site can remain infective for period exceeding 3 months .
4) Quarantine, compulsory slaughter of infected and contact animals and other animals at risk with adequate compensation to the owners.

REFERENCES

Ayoade, G.O. and Adeyemi, I.G. (2003).African swine fever: an overview Pigtrop the information center about pig production and pork meat commodity chains indeveloping countries. *Journal of TropicalLivestock Science* (RevueÃ‰lev.MÃ©d, Paystrop).2003, 56 (3-4): 129-134

Dada Fredrick O.A, Jibrin Garba Musa, and Ijeoma Adanne (2010).Secondary school Atlas. Nigerian South West Geo-political Zonal /Region Published by Macmillan Nigeria Fourth Edition. Pp10

EU (European Union. (2010). News Reports African Swine Fever outbreaks and epidemic 2010 Internal control measures for African Swine Fever; OIE. www.Pig health.com/ASF htm copyright Pig Disease information centre 2010 Pig Health.com.

Ekwe, N. F., and Wilkinson, P.J. (2000).Pigtrop - the information center about pig production and pork meat commodity chains in developing countries. Comparison of genomes of African swine fever virus isolates from Cameroon, other African countries and Europe *Journal of TropicalLivestock Science* (RevueÃ‰lev.MÃ©d, Paystrop), 2000, 53 (3) : 229-236

Merchant, I.A. and Parcker, R.A. (2005) Veterinary Bacteriology and Virology **CBS** Publishers and Distributors 4596/ I-A,11Daryaganji, New Delhi,=110002 (India) Seventh EditionPp703

Radostit, O.M, Gay C.C, Hinchcliff .K. W and Constable P.D (2007). *VETERINARY MEDICINE A textbook of the diseases of cattle, horses, sheep, pigs and goats* 10th ,Edition Saunders Ltd **ISBN**: 978-0-7020-2777-2 Pp 1167-1173

Rahimi, Pooneh, Sohrabi Amir, Ashrafielan Javadet Edalat Rosita, Alamdari Mehran Masoudi Ohammadhossein, Mostofi Saied, and Azadmanesh Kayhan (2010). Emergence of African Swine Fever Virus, Northwestern EMERGING INFECTIOUS DISEASES IranPp1946.