ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 9, Issue, 08, pp.56240-56242, August, 2017

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

COMPARISON OF INNER TO OUTER LEAFLET AND OUTER LEAFLET DENSITY OF ARENAVIRUSES

***,[1]Dr. Abdullah Sethar, [2]Dr. Benjamin W. Neuman, [3]Dr. Gul Hassan Sethar and [4]Dr. Nargis Khan**

[1]Deputy Project Director/Veterinary Officer, Sindh Agricultural Growth Project-Livestock, Livestock & Fisheries Department, Government of Sindh, Hyderabad, Pakistan. 71000
[2]Virology Division, Animal & Microbial Sciences Department, School of Biological Sciences, University, Berkshire, RG6 6AJ, United Kingdom
[3]Al-Amiri Hospital, Kuwait
[4]Dow University of Health Sciences, Civil Hospital, Karachi

ARTICLE INFO

Article History:
Received 15th May, 2017
Received in revised form
19th June, 2017
Accepted 27th July, 2017
Published online 31st August, 2017

Key words:

Arenaviruses.
Constant in vesicles.

ABSTRACT

The current research investigates Comparison of inner to outer leaflet and outer leaflet density of arenaviruses. The results indicates that to understand the density of vesicles as compare to the arenaviruses, and the ratio of various vesicles was taken and plotted the transect plots. Here we are trying to make an assay to detect that how much protein is inserted in the membrane so I have looked at the vesicles from lots of different sources and groups. It was concluded that ratio of inner to outer is constant in vesicles.

Citation: Dr. Abdullah Sethar, Dr. Benjamin W. Neuman, Dr. Gul Hassan Sethar and Dr. Nargis Khan, 2017. "Comparison of inner to outer leaflet and outer leaflet density of Arenaviruses", *International Journal of Current Research*, 9, (08), 56240-56242.

INTRODUCTION

In order to understand the inner to outer and outer leaflet density the data of vesicles from various sources and groups and PICV native and fusion activated was calculated from transect plot.

Comparison of PICV native and fusion activated with the vesicles

In order to understand the inner to outer and outer leaflet density the data of vesicles from various sources and groups and PICV native and fusion activated was calculated from transect plot. It was concluded that the ratio of outer leaflet density is constant where inner to outer leaflet density is variable (Figure 1 and 2). The most proteins are in the inner leaflet of native PICV and the least in vesicles as evidenced by increasing electron density of the inner leaflet relative to the outer leaflet membrane (Figure 3).

Corresponding author:* **Dr. Abdullah Sethar
Deputy Project Director/Veterinary Officer, Sindh Agricultural Growth Project-Livestock, Livestock & Fisheries Department, Government of Sindh, Hyderabad, Pakistan. 71000

Comparison of LCMV native and fusion activated with the vesicles

In order to understand the relative density of the membrane leaflets of LCMV and TCRV the analysis was repeated. As for PICV, LCMV particles showed an increasing protein content of the inner leaflet compared to co-purified vesicles membranes from the same micrograph (Figure 4), while outer leaflet density was similar (Figure 5).

Comparison of TCRV native and fusion activated with the vesicles

Similar results were also obtained for TCRV (Figure 6 and 7) suggesting that all arenavirus particles have considerable protein content in the inner bilayer leaflet. A second interesting effect was that fusion activation (PICV and LCMV) produced particles with an intermediate protein density in the inner leaflet, suggesting that some protein had been removed from the inner face of the membrane. Fusion activated TCRV were not available for analysis, but 20 particle (about 0.5% of the dataset) were identified that had no visible surface GP and had disorganized interior, similar to fusion-activated LCMV and PICV particles. These also showed an immediate inner leaflet protein content as expected (Figure 6).

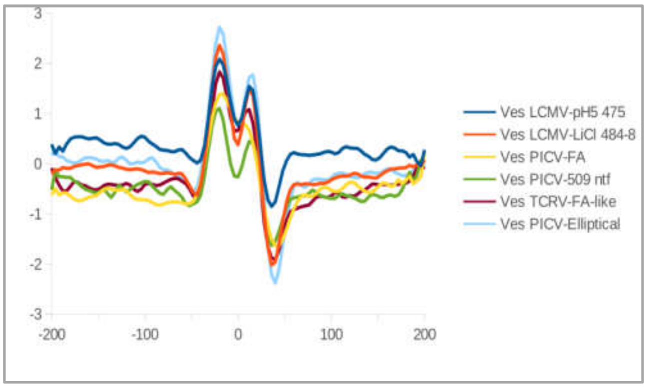

Figure 1. Ratio of inner to outer leaflet density is constant for vesicles

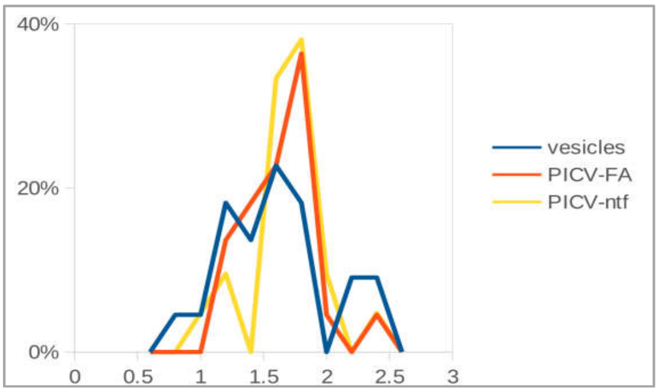

Figure 2. Outer leaflet density is constant in PICV

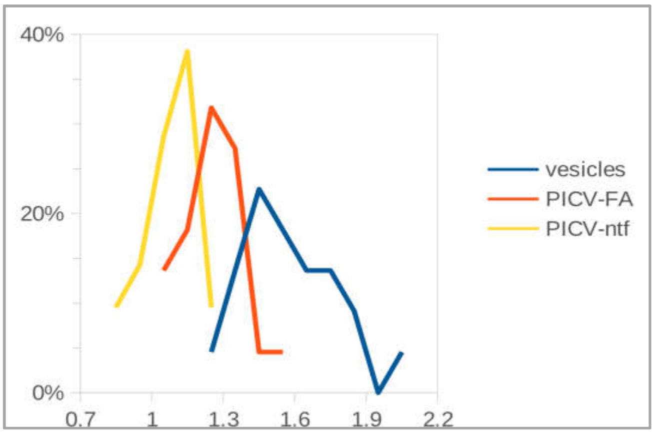

Figure 3. Ratio of inner to outer leaflet is variable in PICV and vesicles from different sources and groups

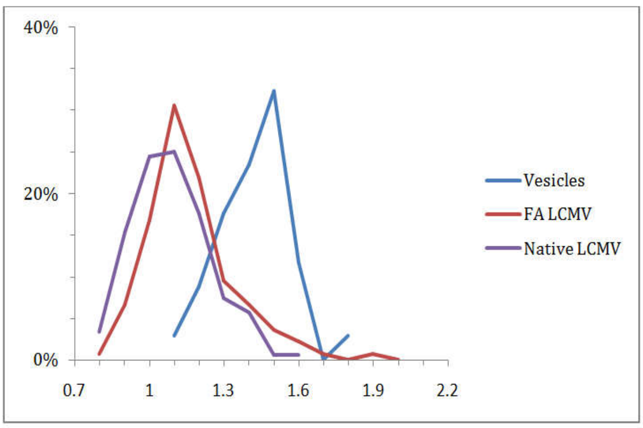

Figure 4. Ratio of outer to inner leaflet density

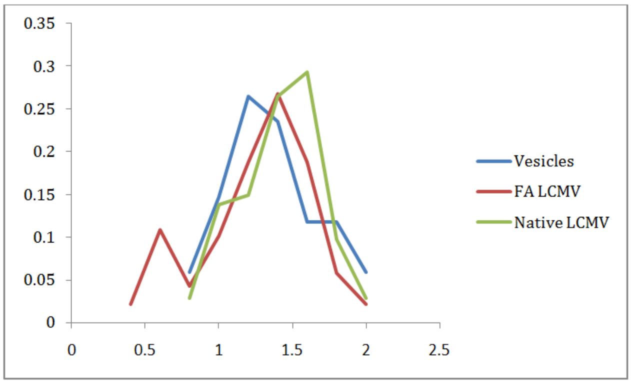

Figure 5. Outer leaflet density only in LCMV

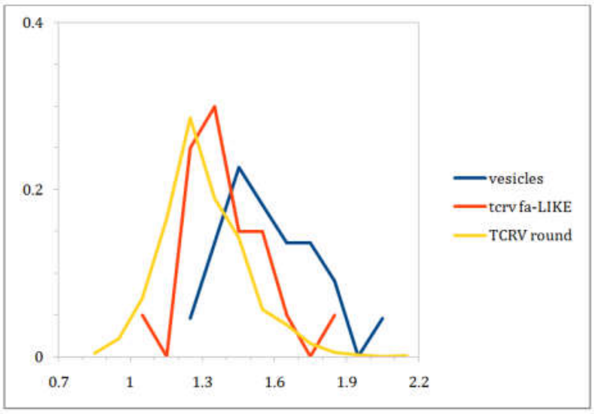

Figure 6. Ratio of outer to inner leaflet density in TCRV

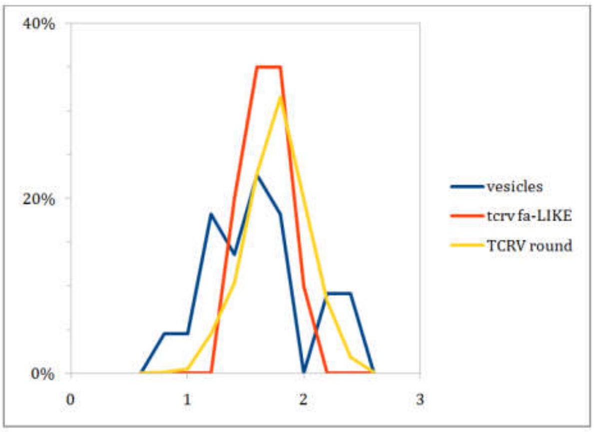

Figure 7. Outer leaflet density only in TCRV

DISCUSSION

From this chapter it it was discovered that arenavirus shape is controlled by complexes containing GPC, Z and NP at the surface of the virion, and that an unbroken inner shell of NP is essential for maintaining a rigid spherical shape. Furthermore, it was revealed that the inner leaflet of intact arenaviruses has a lower density than the inner leaflet of vesicles consistent with the interpretation that viral proteins are displaying lipid molecules from the inner leaflet of the viral membrane.

Conclusion

The results from TCRV (Figure 6 and 7) suggesting that all arenavirus particles have considerable protein content in the inner bilayer leaflet. A second interesting effect was that fusion activation (PICV and LCMV) produced particles with an intermediate protein density in the inner leaflet, suggesting that some protein had been removed from the inner face of the membrane. Fusion activated TCRV were not available for analysis, but 20 particle (about 0.5% of the dataset) were identified that had no visible surface GP and had disorganized interior, similar to fusion-activated LCMV and PICV particles.

REFERENCES

Auperin, D.D. and J.B. McCormick, 1989. Nucleotide sequence of the Lassa virus (Josiah strain) S genome RNA and amino acid sequence comparison of the N and GPC proteins to other arenaviruses. *Virology*, 168(2): p. 421-5.

Buchmeier, M.J. 2002. Arenaviruses: protein structure and function. *Curr Top Microbiol Immunol*, 262: p. 159-73.

Conzelmann, K.K. 1996. Genetic manipulation of non-segmented negative-strand RNA viruses. *J Gen Virol*, 77 (Pt 3): p. 381-9.

Francis, S.J. and P.J. 1988. Southern, Molecular analysis of viral RNAs in mice persistently infected with lymphocytic choriomeningitis virus. *J Virol*, 62(4): p. 1251-7.

Fuller-Pace, F.V. and P.J. 1989. Southern, Detection of virus-specific RNA-dependent RNA polymerase activity in extracts from cells infected with lymphocytic choriomeningitis virus: in vitro synthesis of full-length viral RNA species. *J Virol*, 63(5): p. 1938-44.

Fuller-Pace, F.V. and P.J. 1988. Southern, Temporal analysis of transcription and replication during acute infection with lymphocytic choriomeningitis virus. *Virology*, 162(1): p. 260-3.

Gallaher, W.R., C. DiSimone, and M.J. Buchmeier, 2001. The viral transmembrane superfamily: possible divergence of Arenavirus and Filovirus glycoproteins from a common RNA virus ancestor. *BMC Microbiol*, 1: p. 1.

Iapalucci, S., N. Lopez, and M.T. Franze-Fernandez, 1991. The 3' end termini of the Tacaribe arenavirus subgenomic RNAs. *Virology*, 182(1): p. 269-78.

Romanowski, V. and D.H. Bishop, 1985. Conserved sequences and coding of two strains of lymphocytic choriomeningitis virus (WE and ARM) and Pichinde arenavirus. *Virus Res*., 2(1): p. 35-51.

Salvato, M., E. Shimomaye, and M.B. Oldstone, 1989. The primary structure of the lymphocytic choriomeningitis virus L gene encodes a putative RNA polymerase. *Virology*, 169(2): p. 377-84.

Salvato, M.S. and E.M. Shimomaye, The completed sequence of lymphocytic choriomeningitis virus reveals a unique RNA structure and a gene for a zinc finger protein. Virology, 1989. 173(1): p. 1-10.

Southern, P.J., *et al*., Molecular characterization of the genomic S RNA segment from lymphocytic choriomeningitis virus. Virology, 1987. 157(1): p. 145-55.

****