

Current Event

A Workshop on MERS-CoV Vaccines and Therapies

A two-day workshop on MERS-CoV vaccine research was held in Riyadh on 14-15 Nov 2015.

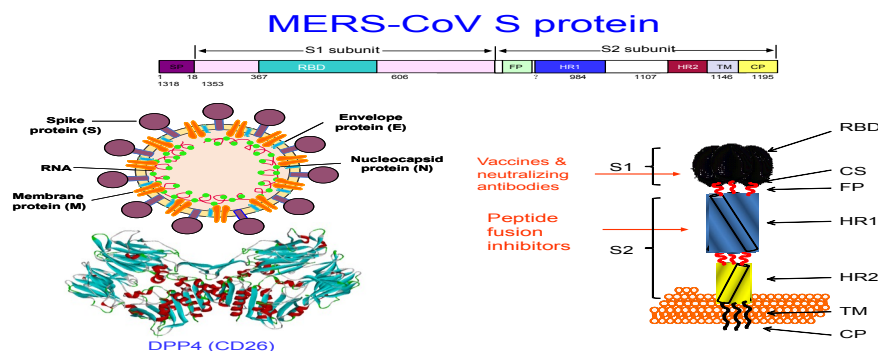
Editorial Notes

MERS-CoV is an emerging disease with high case-fatality rate (19%-40%). A lot of effort is being made in many centers of excellence to translate research on MERS-CoV into an effective vaccine or therapy. The Ministry of Health (MOH), Saudi Arabia organized the first meeting of its kind to share information on the development of a vaccine against MERS-CoV. Generally, vaccine development is very complex, time consuming and costly.

The workshop was organized in collaboration with King Abdul-Aziz City for Science and Technology and the International Vaccine Institute. Participants included many prestigious academic institutions and companies specializing in the development of vaccines and therapies. The workshop was attended by over 80 scientists and researchers from more than six countries, the World Health Organization, the US Institute of Health, the US Department of Health and Human Services, the Qatar Charity Foundation, Samsung, and the World Institute for Vaccine Research of the United Nations as well as potential donors such as the Islamic Development Bank.

Researchers reviewed the susceptibility and suitability of different animal models for MERS-CoV infection, including mice, marmosets, rabbits, rhesus macaques, camels, alpacas, genetically-engineered mice; none of these animals was considered as a perfect model. No lethal model of the infection was developed except in transgenic mice with human Dipeptidyl peptidase-4 (DPP4) receptor. Most of the research focused on induction of neutralizing antibodies capable of blocking the attachment of the virus receptor binding domain to

Fc fragments of SARS-CoV and MERS-CoV S1 domains (Virology tidbits, 2014)



Raj VS et al. *Nature* 2013; 495, 251-254.

Cases of MERS-CoV: International Week (IW) No. 47: 16-22 Nov 2015

Total	0
Symptomatic (S)	0
Asymptomatic (AS)	0
Healthcare worker (S)	0
Healthcare worker (AS)	0

the DPP4 receptor. Methodologies used to achieve this goal included DNA based vaccines and vector boosted S1 vaccine such as the Modified Vaccinia Ankara (MVA). Many researchers presented novel methods and promising findings in early stages of testing. The long-term effects of new vaccines were among the concerns of some participants.

There are encouraging results on the use of neutralizing antibodies as therapy for MERS-CoV infections. Monoclonal and polyclonal therapeutic antibodies are being assessed using few animal models and some are planned for phase one human clinical trials. The Saudi FDA published guidelines for regulatory pathways for clinical trials. The need for having a Vaccine Protection Act was raised.

Development of a vaccine against MERS-CoV would not impact current guidelines to promote infection prevention and control measures, public awareness and improved surveillance. Building capacities in KSA to deal with this emerging disease remains a priority and an investment.

Recent Publications:

Park WB, Perera RA, Choe PG, et al. Kinetics of Serologic Responses to MERS Coronavirus Infection in Humans, South Korea. *Emerg Infect Dis.* 2015 Dec;21(12):2186-9.

Al Hammadi ZM, Chu DK, Eltahir YM, Al Hosani F, Al Mulla M, Tarnini W, Hall AJ, Perera RA, Abdelkhalek MM, Peiris JS, Al Muhairi SS, Poon LL. Asymptomatic MERS-CoV Infection in Humans Possibly Linked to Infected Dromedaries Imported from Oman to United Arab Emirates, May 2015. *Emerg Infect Dis.* 2015 Dec;21(12):2197-200

MERS-CoV in KSA 2015*

Region	Case	Primary	Secondary	U.C.
Riyadh	293	101	184	8
Al-Ahasa	56	11	41	4
Eastern Region	21	10	11	0
Jeddah	17	9	7	1
Qassim	15	9	6	0
Najran	14	9	5	0
Taif	11	8	3	0
Madinah	7	1	6	0
Asir	4	2	2	0
Tabuk	4	4	0	0
Makkah	3	3	0	0
Hail	2	1	1	0
Al-Joaf	2	2	0	0
Jazan	1	1	0	0
Northern Borders	1	1	0	0
Qunfotha	1	1	0	0
Al-Baha	0	0	0	0
Bisha	0	0	0	0
Hafr Al-Batin	0	0	0	0
Qurayyat	0	0	0	0
Total	452	173	266	13

Case: Confirmed Symptomatic. U.C. : Unclassified cases

*Period: Form 29 Dec 2014 to 22 Nov 2015