

WOAH Collaborative Centre Reports Activities 2023

Activities in 2023

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Centre Information

Title of WOA Collaborating Centre	WOAH Collaborating Centre for Camel Diseases
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TOR1 AND 2: SERVICES PROVIDED

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by WOA

Category	Title of activity	Scope
Disease control (true)	1. Laboratory Capacity in Genome sequencing of viruses ,bacteria and parasites 2. Establishment of a PRIMER BANK 3. Establishment of a Biobank 4. Laboratory Capacity in molecular diagnosis 5. Isolation and identification of viruses, bacteria, fungi and parasites	1. Development and activation of specialized diagnostic facilities enable veterinary authority to set plans for early diagnosis, prevention and control of camel diseases. Genome sequencing was carried out for characterization of pathogens namely Anaplasma camelii, Foot and mouth disease virus (FMDV), Infectious bronchitis virus (IBV), MERS CoV, Peste des petit ruminants (PPR), Fowl adenovirus (FAdV). Theileria, SARS CoV2, Corynebacterium pseudotuberculosis and Streptococcus agalactia 2. Establishment of a PRIMER and PROBE bank containing lyophilised primers for most zoonotic and emerging diseases to support effective and rapid response to various disease emergencies. This biobank also promotes scientific research, activation and validation of new tests. 3. Enhancement of capacity building and diagnostic facilities by building up a biobank depository for camel pathogens 4. Increase scope of diagnostic tests and validation of new tests for detection of different pathogens in camel including zoonotic diseases. 5. Several pathogens were isolated/identified from camels and characterized at the ADAFSA-CC

		<p>including Bibersteinia trehalose, Pasteurella multocida, Dermatophilus congolensis, AMR bacteria, Dermatophytosis, Corynebacterium pseudotuberculosis, MERSS CoV, camelpox, Sarcoptes spp., Nematodirus spp., Eimeria cameli</p>
<p>Epidemiology, surveillance, risk assessment, (true)</p>	<p>1. Molecular investigation of peste des petite ruminants virus (PPRV) in Camels in premises with previous history of PPR infection (2023) in Abu Dhabi Emirate, UAE 2. Studies on tickborne parasitic diseases (TBD) and acaricide resistance in livestock including dromedary camels 3. Sero-Surveillance of PPR in Camel in Abu Dhabi, UAE (2023) 4. Surveillance of MERS-CoV and SARS CoV2in dromedary camel in collaboration with FAO Project</p>	<p>1. To understand the role of camels as a typical host, in the epidemiology of PPR in the Abu Dhabi Emirate, UAE. 2. Assess the epidemiological status of TBD in farm animals and the status of acaricide resistance in ticks 3. Laboratory conducted disease surveillance of PPR- Abs detection in camel through ELISA testing. 4. To detect corona viruses in camel samples using Pan-corona virus assay. The project also aimed to serological evidence of SARS CoV2 in camels.</p>
<p>Training, capacity building (true)</p>	<p>1. The virtual training workshop on Camel Disease Diagnosis, held from September 6-7, 2023 2. Two weeks course on AMR dedicated to Maghrebine colleagues project sponsored by WOA and coordinated by IZS Teramo. 3. Parasitology Reference and Teaching Slides kit Preparation 4. Bacteriology Reference and Teaching Slides kit Preparation 5. Scientific Lecture on a topic in Haematology-An Overview 6. Scientific lecture-Quality assurance and quality control to diagnose camel bacterial diseases 7. Middle East Camel Network CAMENET meeting (collaboration) 8. In capacity building</p>	<p>1. ADAFSA-CC in collaboration with Tunisian collaborative reference center for continuous training and capacity building organized a workshop attended by Specialists and experts in the field of veterinary medicine and animal health, veterinary laboratory technicians, researchers and those involved in the field of camel breeding and production almost from all camel rearing countries. ADAFSA-CC experts delivered 6 scientific lectures covering different aspects on diagnosis of camel disease including bacterial, viral and parasitic diseases. 2. ADAFSA-CC in collaboration with OIE Reference Laboratory for Contagious Agalactia, Italy provided 2 oral presentations (camel contagious agalactia and the role ADAFSA-CC in enhancing Biosecurity measures) during the two-week courses on AMR dedicated to Maghrebine colleagues project sponsored by WOA and coordinated by IZS Teramo. 3. As part of contribution to the knowledge sharing and capacity building a parasitology slide set for teaching purpose is prepared by ADAFSA-CC. 4. ADAFSA-CC participates in knowledge transfer and enhances availability of reference materials from camel origin by preparing reference slides from UAE local camel isolates. 5. Educating on the importance of sample collection, safe handling, transportation and laboratory blood tests to paramedical students of Abu Dhabi Vocational Education and Training Institute on 17-02-2023. 6. ADAFSA-CC organized one day seminar entitled "Role of Reference Lab in Enhancing One Health Approach" held on 17/07/2023 targeting veterinarians and laboratory staff in RAK municipality, Al Ain Zoo and Abu Dhabi Quality and Conformity Council, UAE ADAFSA experts presented scientific lectures on below topics:</p> <ul style="list-style-type: none"> • The pivotal role of Biosecurity affairs at ADAFSA in response to epidemic disease emergencies. • Quality assurance and quality control to diagnose camel bacterial diseases. • Antimicrobial resistance mechanisms of bacteria. <p>7. Middle East Camel Network CAMENET steered by ADAFSA in collaboration with member countries -UAE, QATAR and OMAN prepared reference kits for camel parasitic and bacterial diseases aiding educational materials for veterinarians and researchers. 8. ADAFSA's WOA Collaborating Centre for Camel Diseases provided training to 47 students from different educational institutions in UAE namely Higher Colleges of Technology(HCT), United Arab Emirates University(UAEU), Sharjah University &</p>

		Abudhabi Vocational and Educational Training Institute (ADVETI) in different areas of camel diseases during 2023.
Diagnosis, biotechnology and laboratory (true)	1. Increase scope of diagnostic tests 2. Use of a Local Endemic Isolate of Trypanosoma evansi in a direct agglutination test for the Diagnosis and Prevention of Al Zanpour in the United Arab Emirates	1. To increase diagnostic capacity of lab for different diseases by increasing scope of diagnostic tests by validation of six new tests for detection of different pathogens of camel as well other farm animals. Tests include activation of Real Time PCR for diagnosis of Bovine malignant catarrhal fever (BMCF) virus, Tilapia Lake Virus RNA, Antimicrobial susceptibility testing by minimum inhibitory concentration (MIC), Isolation and identification of mycoplasma agalactiae, Detection of Peste Des Petitis Ruminants (PPR) Virus Antibodies in Camels by Competitive Enzyme Linked Immunosorbent Assay (cELISA) , Detection of Neospora caninum Antibodies by Enzyme Linked Immunosorbent Assay (ELISA). 2. To evaluate and compare the efficiency of a local isolated antigen from T.evansi for the detection of Trypanosomosis

TOR3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main focus area for which you were designated

Proposal title	Scope/Content	Applicable area
Interlaboratory Comparison (ILC) Program on diagnostic tests for Camel Diseases	Collaboration with national and international laboratories to share laboratory expertise on diagnosis of: Brucella by RBT Brucella by ELISA Trypanosoma spp. by microscopy Acid Fast Bacilli (AFB) by microscopy. Pasteurella multocida identification and antimicrobial susceptibility test (AST) Trypanosoma spp. By RT-PCR Camel pox virus by RT-PCR Fowl Adenovirus by RT-PCR	Laboratory expertise health management
First proficiency test (PT) on PPR serology in camel	Assures verification of diagnostic procedure and certifies the performance of the participating laboratories	Laboratory expertise health management
Development of Teaching Kit for Parasitology	Educational and reference kit for blood parasites that infect camels prepared from field samples, serve as a reference for parasitic diseases of camels, targeting diagnostic laboratories as well as university students, and researchers.	Laboratory expertise Training and education health management
Development of Teaching Kit for Bacteriology	Educational and reference kit for bacteria that infect camels prepared from field samples, serve as a reference for bacterial diseases of camels, targeting diagnostic	Laboratory expertise Training and education health management
Camel Expert Opinion on Surra Infection	Upon request by WOA, experts at the collaborating center provided an expert opinion on the appropriate risk mitigation measures that may apply for imported camels from countries/zones infected with T.evansi (surra).	Laboratory expertise

3. In exercising your activities, have you identified any regulatory research needs* relevant for WOA?

No

4. Did your Collaborating Centre maintain a network with other WOA Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

Name of WOA CC/RL/other organisation(s)	Location	Region of networking	Purpose
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		Centre	
WOAH Collaborating Centre for Continuing Education and Capacity Building in the Veterinary Domain. Tunisia Centre National de Veille Zoosanitaire (CNVZ)	Tunisia	Africa	Capacity Building of Veterinarians by sharing scientific knowledge on camel disease diagnosis
CIRAD	France	Europe	To organize the first proficiency test (PT) on PPR serology in camel
Surveillance of MERS-CoV and SARS CoV2 in dromedary camel in collaboration with FAO Project	UAE	MiddleEast	To detect corona viruses in camel samples using Pan-corona virus assay. The project also aimed to serological evidence of SARS CoV2 in camels.
Middle East Camel Network -CAMENET (United Arab Emirates, Bahrain, Saudi Arabia, Qatar, Oman, Kuwait, Jordan, Yemen)	UAE	MiddleEast	1. Initiation of the CAMENET technical committee : the committee was officially established to enhance collaborative efforts and streamline technical operations within the network 2. Meetings conducted : - Four virtual meetings were held to discuss and coordinate various initiatives and projects. - one onsite meeting was hosted by ADAFSA – Collaborating centre of camel diseases providing a platform for in depth discussion and strategic planning 3. development of the action plan for the years 2024-2025: a comprehensive action plan was proposed for the upcoming two years outlining key objectives, and activities.
UAE local authorities- 1. Ras Al Khaima municipality 2. Zoo & Aquarium Public Institution in Al Ain (ZAPIA) 3. Abu Dhabi Quality and Conformity Council	UAE	MiddleEast	1. The pivotal role of Biosecurity affairs at ADAFSA in response to epidemic disease emergencies. 2. Quality assurance and quality control to diagnose camel bacterial diseases. 3. Antimicrobial resistance mechanisms of bacteria.

TOR4 AND 5: NETWORKING AND COLLABORATION

5. Did your Collaborating Centre maintain a network with other WOAHC Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

Name of WOAHC CC/RL/other organisation(s)	Region of networking
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	Location	Centre	Purpose
Food and Agriculture Organization	Italy	Europe	1. To investigate the potential recombination of MERS-CoV and SARS-CoV-2 or other coronaviruses in camels 2. To investigate SARS-CoV-2 transmission to farm and companion animals in contact with COVID-19 infected humans.
Higher College of Technology (HCT)	UAE	MiddleEast	1.To assess the epidemiological status of TBD 2. To identify factors that contribute to the acaricide resistance in ticks
Faculty of Medical and Health Sciences, LIWA College, Abu Dhabi UAE	UAE	MiddleEast	To isolate, evaluate and compare the efficiency of an antigen isolated from T.evansi for the detection of Trypanosomosis
Abu Dhabi Public Health Centre (ADPHC)- Overview of AMR and animal health.	UAE	MiddleEast	knowledge sharing, highlight the situation of AMR in animal sector, implementation of one health concept.
UAE-UK One Health AMR consortium which includes academic, research institutions and government agencies from both UK and UAE at the Federal and Emirate level.	UAE	MiddleEast	Establish a National One Health AMR Biosecurity Consortium aiming to implement a national One Health genomic epidemiological research and surveillance infrastructure focusing on AMR.

TOR6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOA?H?

Yes

NAME OF EXPERT	KIND OF CONSULTANCY	SUBJECT
Dr. Abdelmalik Khalafalla	Invited speaker-The 6th Conference of the International Society of Camelid Research and Development (ISOCARD-2023) King Faisal University, Al Ahsa, Kingdom of Saudi Arabia, on 12-16th of March 2023	The 6th Conference of the International Society of Camelid Research and Development (ISOCARD-2023) King Faisal University, Al Ahsa, Kingdom of Saudi Arabia, on 12-16th of March 2023
Dr. Hassan Ishag Dr. Shameem Habeeba Dr. Abdelnasir Terab	Invited reviewers-Contributed with the Thematic Group (TG) 4 of the One Health High Level Expert Panel (OHHLEP) to review 5662 title and abstract in COVIDENCE interface for the systematic review for upstream drivers of pathogen spillover	Contributed with the Thematic Group (TG) 4 of the One Health High Level Expert Panel (OHHLEP) to review 5662 title and abstract in COVIDENCE interface for the systematic review for upstream drivers of pathogen spillover
Asma Abdi Mohamed	Invited Speaker-WOAH-Middle East-17th Conference of the Regional Commission for the Middle East Riyadh, Saudi Arabia, 1 - 5 October 2023	WOAH-Middle East-17th Conference of the Regional Commission for the Middle East Riyadh, Saudi Arabia, 1 - 5 October 2023.
Dr. Rashid Khan Dr. Mohammed	Invited Speaker-WOAH Reference lab for PPR network	WOAH Reference lab for PPR network workshop – 13

Albreiki	workshop – 13 December 2023 organised by CIRAD- France- Online	December 2023 organised by CIRAD- France- Online
Dr. Hassan Ishag Dr. Shameem Habeeba Dr. El Tigani Ahmed El Tigani Mohammed	Expert opinion-To provide an expert opinion on Surra Infection on camel, requested by WOAAH.	To provide an expert opinion on Surra Infection on camel, requested by WOAAH.

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

No

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOAAH, to personnel from WOAAH Members?

Yes

a) Technical visit : 2

b) Seminars : 1

c) Hands-on training courses: 1

d) Internships (>1 month) : 0

TYPE OF TECHNICAL TRAINING PROVIDED (A, B, C OR D)	CONTENT	COUNTRY OF ORIGIN OF THE EXPERT(S) PROVIDED WITH TRAINING	NO. PARTICIPANTS FROM THE CORRESPONDING COUNTRY
A	CAMENET Steering Committee Meeting	GCC	9
A	Technical Visit-CDC delegation headed by Ms. Heather Burke, the Regional Director for the Middle East and North Africa	United States Department of Health and Human Services	6
B	Workshop on Camel Disease Diagnosis	Tunisia	140
C	Quality assurance and quality control to diagnose camel bacterial diseases	UAE	48

TOR8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOAAH?

Yes

NATIONAL/INTERNATIONAL	TITLE OF EVENT	CO-ORGANISER	DATE (MM/YY)	LOCATION	NO. PARTICIPANTS
International	Organised Workshop on Camel Disease Diagnosis	WOAH Collaborating Centre for Continuing Education and Capacity Building in the Veterinary Domain. Tunisia Centre National de Veille Zoosanitaire (CNVZ)	2023-07-06	Virtual	140
International	Organised 4 virtual Meetings of the Technical Committee of the Middle East Camel Network (CAMENET)	Sub-Regional Office of the World Organization for Animal Health (OIE) for the Arabian Gulf	2023-11-21	virtual	12

International	Organised onsite Meeting of the Technical Committee of the Middle East Camel Network (CAMENET)	Sub-Regional Office of the World Organization for Animal Health (OIE) for the Arabian Gulf	2023-11-21	Abu Dhabi	21
International	Participated Insight from WOAHLaboratory Equipment Management and Sustainability	Panelist- WOAHL Parallel Session with Diagnostics for Animals -ISWAVLD 2023 Symposium Lyon (France) 30-6-2023	2023-06-30	France	30
International	Participated Webinar CIRAD -Organization of Proficiency Test	WOAH/FAO Reference Laboratory for peste des petits ruminants (PPR) CIRAD, France	2023-06-14	Virtual	20

TOR9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOAHL that may be useful to Members of WOAHL

a) Articles published in peer-reviewed journals:

3

1. *Pathological, microscopic, and molecular diagnosis of paratuberculosis/John's disease in naturally infected dromedary camel (Camelus dromedarius).* Tigani-Asil ETAE, Abdelwahab GED, Abdu EHAM, Terab AMA, Khalil NAH, Marri ZJMA, Yuosf MF, Shah AAM, Khalafalla AI, Ishag HZA. *Vet World.* 2023 Jun;16(6):1277-1283. doi: 10.14202/vetworld.2023.1277-1283. Epub 2023 Jun 8. PMID: 37577185

2. *Isolation and genetic characterization of MERS-CoV from dromedary camels in the United Arab Emirates.* Khalafalla AI, Ishag HZA, Albalushi HIA, Al-Hammadi ZMA, Al Yammahi SMS, Shah AAM, Al Muhairi SSM. *Front Vet Sci.* 2023 Aug 31;10:1182165. doi: 10.3389/fvets.2023.1182165. eCollection 2023. PMID: 37720473

3. *The evaluation of five serological assays in determining seroconversion to peste des petits ruminants virus in typical and atypical hosts.* Tully M, Batten C, Ashby M, Mahapatra M, Parekh K, Parida S, Njeumi F, Willett B, Bataille A, Libeau G, Kwiatak O, Caron A, Berguido FJ, Lamien CE, Cattoli G, Misinzo G, Keyyu J, Mdetele D, Gakuya F, Bodjo SC, Taha FA, Elbasher HM, Khalafalla AI, Osman AY, Kock R. *Sci Rep.* 2023 Sep 8;13(1):14787. doi: 10.1038/s41598-023-41630-3. PMID: 37684280

b) International conferences:

6

1. *Keynote speech: Dr. Abd Elmalik Ibrahim Khalafallah: Zoonosis Associated with Dromedary Camels . The 6th Conference of the International Society of Camelid Research and Development (ISOCARD-2023) King Faisal University, Al Ahsa, Kingdom of Saudi Arabia, on 12-16th of March 2023.*

2. *Oral Presentation: Dr. El Tigani Ahmed El Tigani-Asil: Anatomopathological Profile, microscopic and Molecular diagnosis of Paratuberculosis/John's Disease in Naturally Infected Dromedary Camels (Camelus dromedaries). The 6th Conference of the International Society of Camelid Research and Development (ISOCARD-2023) King Faisal University, Al Ahsa, Kingdom of Saudi Arabia, on 12-16th of March 2023.*

3. *Oral Presentation: Asma Abdi Mohamed: Update on the Camel Middle East Network (CAMENET). WOAHL-Middle East-17th Conference of the Regional Commission for the Middle East Riyadh, Saudi Arabia, 1 - 5 October 2023*

4. *Oral Presentation: Dr. Mohammed Albreiki & Dr. Rashid Khan: Serodiagnosis Proficiency Testing Scheme for PPR in Camel. WOAHL Reference lab for PPR network workshop – 13 December 2023 organised by CIRAD- France- Online*

5. *Poster Presentation: International Symposium of the World Association of Veterinary Laboratory Diagnosticians (ISWAVLD) ISWAVLD 2023 (29 June – 1 July, Lion, France) A Clinical, Pathological, Epidemiological, and Molecular Investigation of Recent Outbreaks of Peste des Petits Ruminants Virus in Domestic and Wild Small Ruminants infection. ABDI MOHAMMED A. and ISHAG H. (Poster number P-45). <https://bit.ly/45lcvGe>.*

6. *Poster Presentation: Global conference on the emergency management in Maison de le Chimie, Paris, France 03-05 April 2023. Title of the abstract: VLD-ADAFSA experience in rapid laboratory diagnosis and phylogenetic analysis of the Monkeypox virus in May 202.*

c) National conferences:

4

1. *One Health AMR Research Collaboration Planning Workshop, 27th -28th February 2023 Organized by Cefas & Khalifa University, Khalifa University, Abu Dhabi, UAE*

2. *Oral Presentation: Noura Alzarooni : Developing the Knowledge Between the Field/Specialist and the Future Veterinarian and Medical Students. The First International Conference on Advancements in Health Sciences (ICAHS) 2023, Dubai March 9*

3. *Workshop on Paratuberculosis (John's disease), 18 July 2023 - Organized by ADAFSA, Abu Dhabi, UAE.*

4. *Oral Presentation – Dr. Ghada Abdelwahab - AMR management and surveillance in animal sector - Abu Dhabi - ADAFSA activities. UAE-UK One Health AMR consortium, November 15th, 2023- Abu Dhabi.*

d) Other (Provide website address or link to appropriate information):

3

1. *Whole genome sequencing of MERS CoV isolates and deposition of the sequence in the NCBI GenBank database (<https://www.ncbi.nlm.nih.gov/nucleotide/?term=Middle+East+respiratory+syndrome-related+coronavirus+isolate+UAE-AI+Ain>)*

2. *Partial genome sequences of groEL gene of Candidatus Anaplasma camelii (Accession numbers OR159796 - OR159804)*

<https://www.ncbi.nlm.nih.gov/nuccore/OR159796,OR159797,OR159798,OR159799,OR159800,OR159801,OR159802,OR159803,OR159804>

3. 1. Abstracts Booklet -2023-WOAH Collaborating Centre in Camel Diseases and WOAH Collaborating Centre in Quality Management Systems This booklet includes the research studies on camel diseases and quality management activities carried out at the Veterinary laboratories of ADAFSA during the past eight years (2015 to 2023).

11. What have you done in the past year to advance your area of focus, e.g. updated technology?

1. Build up a primer bank specific for WOAH recommended tests for diseases affecting camel as well as other species.

2. Enhancement capacity building and diagnosis facilities by building up a biobank depository for camel viral and bacterial isolates including resistant bacteria isolated from camels in addition to reference samples for infectious diseases collected from camel. The Biobank also includes reference nucleic acids from camel pathogens as well as camel sera.

12. Additional comments regarding your report: