Personal data

Name: Maowia Mohamed Mukhtar

Date of Birth: 25.12.1956

Place of Birth: Khartoum, Sudan

Marital Status: Married

Citizenship: Sudanese

Languages: Arabic, and English

Professional data:

Professor

Current post:

Institute of Endemic Diseases

University of Khartoum

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Education and Qualifications

Degree	University	Country	Date awarded
Ph.D.	Cornell University	USA	June 1989
M.Sc.	Cornell University	USA	August 1985
B. V.Sc.	University of Khartoum	Sudan	June 1982

Major Subjects:

Majoring in Immunology, Molecular Biology and Microbiology.

M.Sc. Thesis Title:

Chemotactic response of Equine ploymorphonuclear Leukocytes to Streptococcus equi.

Ph.D. Thesis title:

The M protein and the heterogeneity of Streptococcus zooepidemicus.

Awards and academic prizes:

Distinctions in Anatomy, Physiology, Nutrition, Pharmacology, Parasitology, Pathology, Microbiology, Medicine, Animal production, Preventive Medicine and Public Health, and Surgery and Obstetrics.

Prizes: Best student prize in Anatomy, Histology, Microbiology, Pathology, Pharmacology, Nutrition, Medicine, Preventive Medicine and Public Health. Best student prize in Part IV B.V.Sc., and Sudan Agriculture Bank prize for best final B.V.Sc. Student.

Training Courses:

1. World Health Organization (WHO) course on Immunology, Vaccinology and

Biotechnology applied to infectious diseases. WHO Immunology Research and Training

Center, Laussanne, Switzerland 9 September to 28th October 1992.

2. World Health Organization Research Fellow , Conducting research on Immunology and

DNA analysis of Leishmania Major. WHO Immunology Research and Training Center,

Laussanne, Switzerland, 28 October 92 to 31 March 1993.

3. World Health Organization advance Immunology, Vaccinology and Biotechnology course, Arusha Tanzania from 4 December 96 to 19 December 96.

Workshops attended:

1. Application of Atlas Geographical Information System (Atlas GIS) in Health and Mapping of diseases. Organized by TDR/WHO, 2 to 9th 1996, Kampala, Uganda.

2. The use of Atlas GIS in mapping of Onchocerca volvulus in Sudan

Organized By TDR/WHO,3 to 6 September 1996, Ouagadougou, Burkina Fasso.

3. Analysis of Onchocerca volvulus Rapid Epidemiological Mapping (REMO) data

Using Atlas GIS. Organized By TDR/WHO, 14 to 17 September 1997, Ouagadougou, Burkina Fasso.

Academic Experience:

1.Professor of infectious diseases

Institute of Endemic Diseases, University of Khartoum 2003- now

2. **Director**

Institute of Endemic Diseases Feb 2003 – 2006

Responsible for the Institute financial, academics, administration and development plans of the institute..

Febraury 2002 – 2006.

3. Acting Director

Responsible for financial academics and administration and development plans of the Institute activities

2001 to 2002.

4. **Head, Department of Molecular Biology**

Institute of Endemic Diseases

Responsible for the research, training teaching and development of Molecular Biology research and courses.

June 1994 to 2001.

5. Associate Professor

Department of Molecular Biology

Institute of Endemic Diseases

University of Khartoum

March 1998 – 2003

6. Assistant Professor

Department of Preventive Medicine and Public Health

Faculty of Veterinary Science

University of Khartoum

June 1989 to June 1994

7. Research Assistant

Department of Immunology, Microbiology and Parasitology

New York State College of Veterinary Medicine

Cornell University

USA

August 1987 to June 1989

8. Teaching assistant

Department of Immunology, Microbiology and Parasitology

New York State College of Veterinary Medicine

Cornell University

USA

September 1983 to August 1987

9. Teaching assistant

Department of Preventive Medicine and Public Health

Faculty of Veterinary Science

University of Khartoum

June 1982 to September 1983

Teaching experience

1. Basic Immunology course for undergraduates (University of Khartoum, College of Laboratory Sciences 1994).
2. Advance Immunology course for Graduate students (University of Khartoum, and Higher Medical Specialty Council, Ministry of Health 1998).
3. Basic Molecular Biology Course (University of Khartoum1998).
4. Advance Molecular Biology course (University of Khartoum1999).
5. Basic Molecular Biology Course, Faculty of Agriculture, University of Khartoum (2000).
6. Epidemiology Course for M.V.Sc. students (University of Khartoum 1996).
7. Bio-statistic Course for Master of Tropical Animal Health Degree students (University of Khartoum, 1997).
8. Part time lecturer in Bacteriology (University of Khartoum1991)
9. Immunology course (Sudan Medical Specialty Part 1 students, 1999)
10. Immunology course (Sudan Medical Specialty Part 1 students, 2000)
11. Immunology course (Sudan Medical Specialty Part 1 students, 2001)
12. Immunodermatology course (Sudan Medical Specialty Part 11 students, 1999)
13. Immunodermatology course (Sudan Medical Speciality Part 11 students, 2000)
14. Basic Immunology Course (Sudan Medical Speciality council Part 1; 2002)
15. Immunodermatology Course (Sudan Medical Speciality Council, Part 11; 2002).

Research Experience

1. Humoral Immunity techniques in research of Infectious diseases.

2. Cellular Immunity techniques in research of Infectious diseases.

3. Molecular Biology and Recombinant DNA techniques.

4. Radioisotopes in Biology experiments.

5. Tissue cultures and monoclonal antibody production.

6. Electron Microscopy.

7. General Bacteriology techniques.

8. Atlas GIS health mapping.

Research Interest:

1. Immunology and Molecular Biology of Tropical Diseases.

2. Host parasite interaction.

3. The use of Atlas GIS in Health

4. Biomarkers and diagnostics.

Research Activities:

Conducting the following research projects:

1. Cellular Immunity and cytokine profiles in Human Onchocerciasis.

Supported by a grant from NIH- Sudan medical research Council project.

2. DNA heterogeneity of Onchocerca volvulus isolates from different

Onchocerciasis

Endemic regions of Sudan. Supported by a grant from TDR\ WHO.

3. Rapid Epidemiological Mapping of Onchocerciasis (REMO) and the

Epidemiology of

Malaria in Khartoum State. Supported by a grant from TDR\WHO.

4. Immunity in Bovine Schistosomiasis. Supported by a grant from The

5. Cellular Immunity in Measles infection. Supported by a grant from the

6. Characterization of the immune system of Camelus dromedarius.

7. Measles mass vaccination; Supported by WHO grant.

8. Proteomics of the urine of Kala-Azar patients (Supported by the International Center Genetic Engineering and Biotechnology)

9. Biomarkers of the urine and sputum of Mycobacterium TB patients (Supported by TDR/ Find)

10. The epidemiology of pulmonary TB in eastern Sudan (supported by EDCTP).

11- Diagnosis of Visceral Leishmaniasis: a multicenter study of global network for diagnosis of Visceral Leishmaniasis (supported by WHO/ TDR).

12- Improvement of diagnosis of pulmonary tuberculosis (Supported by EDCTP).

Supervision and training

Supervised Thirty two (32) Master degree thesis:

1. Mussa E. Beshir (awarded M.V. Sc. University of Khartoum 1992)

Thesis title: Immune response of cattle vaccinated with Glutathione- S-transferase and Keyhole limpet hemocyanin to Schistosoma bovis infection.

1. Victor L. Kuajock (awarded M.V.Sc. University of Khartoum 1994). Thesis title: genetics and Molecular studies on multiple antibiotic resistance of Bovine Mastitis bacteria.
2. Noura K. Mohamed (awarded M.V.Sc. University of Khartoum 1994). Thesis title: Chemotaxis and phagocytic immune responses of sheep polymorphonuclear neutrophils to Staphylococcus aureus subspecies anaerobius.
3. Adam M. Adam (Awarded M.V.Sc. University of Khartoum 1992, Co-supervisor) Thesis title: Studies on group C Streptococci in Equine in Sudan.
4. Abdul Wahid Saeed M. Ali (awarded M.V.T.A.H, University of Khartoum 1995). Thesis title: Analysis of the cellular immunity of chicken to Newcastle, Fowl pox, and infectious Bursal disease vaccines.

6. Salah M. A. EL Beshir (Awarded M.Sc. 1995). Thesis title: Properties, protein and antigen profiles of Staphylococcus aureus isolated from abscesses of sheep.
7. Abdalla Hassan Sharief (Awarded M.Sc 1995). Thesis title: Identification of possible reservoirs of Leishmania donovani in two villages in Gadarif state Eastern Sudan.
8. Iman M. Dafalla (Awarded M.Sc 1995). Thesis title: Experimental infection of Swiss white mice strain with Leishmania donovani and Leishmania major.

9. Tarrig Babikir Higazzi (Awarded M.Sc.) . Thesis title Protein and antigen profiles of Onchocerca gutturosa and Onchocerca volvulus.
10. Maha A. Amin (Awarded M.Sc1995). Thesis title: The Filaricidal effect of some compounds against Onchocerca gutturosa in Vitro.
11. Magdi M. M. Ali (Awarded M.Sc.1995). Thesis title: Proliferative and cytokine responses of human Onchocerca volvulus Patients.
12. Ali A. EL Irragi (Awarded M.Sc. November 1996). Thesis title : Monitoring of maternal immunity against Anthrax (Bacillus anthraces , Black quarter (Colsridum chauvii and Hemorrhagic septicemia (Pasteurella hemorrhagica) vaccines in bovine calves.
13. Hawa T. El Hussien (M.Sc. student will finish Dec. 1998).

Thesis title: Isolation and enumeration of lymphocytes of camels.

14 lwia S. Ahmed (Awarded M.V.Sc.1997). Thesis title : Studies on Corynebacterium ovis sheep isolates.

15 Nabeeha AbdelGalil (1998). Cytogenetics and the immune system of Camelus dromedaries.

16 Aisha Husien (1998). Characterization and molecular analysis of Mycoplasma sheep isolates.

17 Haja Sittana El Mubarak (1999). A serological and virological study of Measles in Khartoum, Sudan.

18 Misk El Yemen A. El Mekki (2000). Sensitivty and specificity of RAL2, Calreticulin and PDI recombinant antigens of Onchocerca volvulus.

19 Rihab Abdel Gadir Hashim (2001). Parasite diversity and antibody response to Plasmodium falciparum in Patients with cerebral Malaria.

20 Mona Abdel rahaman El Agib (2001). Monitoring of Leishmania donovani specific antibodies in Kala-Azar and Post kala-Azar Dermal Leishmaniasis patients in Sudan.

21 Manal Gamal Eldin Abdu (2001). Characterization of Pentostam resistant Leishmania Donovani isolates from eastern Sudan.

22 Magzoub Abbas Magzoub (2003).

23 Monitoring of CD4 and CD8 T- lymphocytes in Sudanese HIV/ AIDS patients.

24 Amel Saeed AbdElrahaman (2005). Comparison of liquid DAT, Freeze dried DAT, rK39, Diamed and katex urine test in diagnsis of visceral Leishmaniasis in Eastern Sudan.

25 Israa Omer Elrayah (2005). Cellular and cytokine responses of Mycetoma patients.

26 Amel Farouk (2006). HLA class11 alleles associated with myctoma infection in Sudanses patients.

27 Rasha Wage AllahShanteir (2006). Monitoring of antibodies responses in mycetoma patients.

28 Dina Tag Elsir (2007). Correlates of immunity in dermal Leishmaniasis Sudanese patients.

29 Mukhild Imam Ali (2007). Molecular characterization of Leishmania isolates from dermal Leishmaniasis Sudanese patients.

30 Aymen Awad (2008). Detetion of Leishmania donovani antigens in urine of visceral leishmaniasis patients.

31 Nazik Awad (2008). Protein profiles of Leishmania donovani axenic forms.

32 Hiba Osman Kailani (2009). Identification of new biomarkers for diagnosis of pulmonary tuberculosis.

33 Mohamed Osman H. Tahir 2010. Thesis title: Cytokines profiles of Sudanese visceral Leishmaniasis patients.

34 Samah M H. Saad, 2011. Thesis title: Molecular characterization of Sudanese Gum Arabic Tree (Acacia senegal var. senegal) using random amplification of polymorphic DNA (RAPD).

35 Tasneem Maowia (2012). Analysis of antibody responses to candidate malaria vaccine candidates in seasonal unstable malaria endemic areas in eastern Sudan.

36 Hablatalla Gindeel (2012). Invitro analysis of anit leishmania drugs of isonaizid.

37 Shimaa Haj Ahmed. 2015. Thesis title:

38 Nesrin Jaffar Gindeel 2015. Thesis title: Seroinvestigation of Dengue fever epidemic in Port Sudan and molecular typing of the virus.

39 Abdallah Elsir A. Ahmed 2015; Thesis title: Identification of new candidate RAPD markers for typing Leishmania donovani parasites.

40 Ehab Abdulaziz Mohamed Elagab 2006. Thesis title: Cytokines Profile of stimulated peripheral blood monocytes of Eumycetoma patients.

41 *Nada Merghani 2012: Thesis Title:* The Cytotoxic Effect of Phenolic Based Compounds, Calcium Hydroxybenzoates, on Breast Cancer Cells

42. Hana Abd Alfatah Kylany. 2015. Thesis title: Genetic diversity of Plasmodium vivax isolates from Kassala StateSudan.

B. Supervision of Ph.D. students .

1. Mohamed Haroun Ali (awarded 2001)

Thesis title: Analysis of the cellular and Humoral immunity to Rinderpest virus.

2. Victor L. Kuajock (Awarded 2001)

Thesis title: Immunology and molecular biology of Mycobacterium (Nocardia) infection in cattle.

3. Abbas Mohamed Ahmed (expected 2004):

Thesis title: Local and systemic immune response to combined sheep pox and anthrax vaccine.

4. Ali M. El Eraggi (expected 2004):

Thesis title: Molecular clustering and drug resistance of Mycobacterium TB in Sudan.

5. Layla Ismail (expected 2003):

Thesis title: Population genetics of Camelus dromedarius in Sudan

6. El Waleed Mohamed El Amin (2004)

Molecular characterization and genetic markers of Sudanese Leishmania parasites

7. Abbas Mohamed Ahmed (2006)

Development of combined Anthrax- sheep box vaccine

8. Sahar Mubarak Bakhiet (2006)

Molecular Typing of Sudanese Leishmania parasites.

9.Annas El Mehbashi (2008). Molecular epidemiology and drug resistance of Mycobacterium tuberculosis in Yemen.

10. Fatma Abbas Khalid (2009). Epidemiology of pulmonary tuberculosis and molecular characterization of drug resistant isolates from Kassala State (supported by EDCTP senior fellowship grant 2005 to 2007).

11. Maha Elnasri, 2010 on The adversity and drug resistance patterns of Mycobacterrium Tuberculosis isolates from different regions of Sudan.

12. Aymen Awad abdel Halem. 2011. Thesis title: Analysis of the cytokine responses of Dermal and Visceral Leishmaniasis patients in Sudan.

13. Yassin Abdel Warrith Abdel Rashid; 2009; Thesis title: Leishmaniasis in Yemeni children: Seroepidemiological study in Taiz and Lahj Governerates.

14 Dina Tagelsir Eltayeb Babiker. 2013. Analysis of the innate and adaptive immune responses of VL patients to Leishmania vaccine candidates.

15.Manal Gamal Abdu, 2010; Thesis title: Molecular determinants of novel virulence genes of Sudanese Leishmania isolates causing diverse clinical forms

16.Hadeel Faisal 2014. Thesis title: *Analysis of the systemic cytokine responses of Visceral Leishmaniasis and Pulmonary tuberculosis patients to homologous and heterologous antigen stimulation*

17. Huda Khalid 2014. Thesis title: Characterization and production of neutralizing antibodies for venoms of (*Naja nubiae)* and (*Echis ocellatus*) snakes species from Sudan.

18. Asim Osman Abdoun 2015. Thesis title: Evaluation of new point of care rapid tests and development of urine based diagnostic test for Visceral Leishmaniasis

19. Arif Fath Alrahman Fadial Allah 2015. The association of IL-10 (-1082 G/A) and IFNg (+874 T/A) SNIPs and cytokine expression with the development of complicated Schistosomiasis in Sudanese patients

Awarded Research Grants

1. Principals Investigator World Health Grant # 920144.

To identify possible reservoir hosts of Leishmania donovani in kala-azar endemic region in eastern Sudan. 1992-1993.

2. Principals Investigator World Health Grant # 950011 to study the Epidemiology of

Malaria and to rapid epidemiological mapping (REMO of Onchocerca volvulus infection in Sudan.

1995-1996

3. Principals Investigator , University Of Khartoum Research Grant For Investigation of

Multiple antibiotic resistance among bacterial Pathogens.

4. Co — investigator World Health Organization Grant # 940452 to study the pathogenesis of deferent clinical presentation of Onchodermatitis in natural and ivermectin treated Sudanese

1995-1995.

5. Principals Investigator World Health Organization Atlas GIS grant to map Onchocerca volvulus infection in Sudan.

1995-1996.

6. Investigators World Health Organization grant number 960636 to study the immunology and histamine release in Onchocerciasis patients pre and post ivermectin treatment.

7. Principals Investigator International Foundation of Science grant number B/2584-1, to study the cellular immune response of camel peripheral blood Lymphocytes to Tryapanosoma evansi , Rinderpest , Hydata and Brucella antigens Jan 1997 to June 1998.

8. Principal investigator WHO/TDR/EMRO grant numbe98/109 To study the host and parasite factors associated with Post Kala-azar Dermal Leishmaniasis (PKDL). 1998 to 1999.

9. Principal investigator WHO/TDR grant number 990559 to study the parasite determinants associated with Post Kala Azar dermal Leishmaniasis in Sudan.

Awarded 1999 – 2000.

10. Principal investigator WHO TDR grant No. A0810. Molecular clustering and drug resistance of Mycobacterium TB of different regions of Sudan. 2000 to 2002.

11. Principal investigator WHO grant No. YP/181

Title: efficacy of measles mass vaccination in urban and periurban sites in Khartoum, Sudan 2001 to 2003.

12. **Senior fellowship EDCTP** to study the burden of pulmonary tuberculosis in eastern Sudan 2005.

13- Principal Investigator ICGEB grant on Proteomics of the urine of Kala-Azar patients 2005- 2006.

14. PI of TDR/ FIND grant on Biomarkers of Mycobacterium TB infection 2006 – 2007

15 Co-investigator on UBS grant on Correlates of protective immunity to Leishmania infection 2005 – 2006

16. Principal Investigator WHO/ TDR/ FIND grant on Biomarkers of pulmonary tuberculosis Sudanese patients. 2006 – 2008.

17. Co- Principal investigator: WHO/ TDR grant on diagnosis network of Visceral Leishmaniasis

18. Principal investigator CRDF/ USA grant on Proteomics of the urine of Visceral leishmaniasis patients: identification of diagnostic and prognostic markers. April 2011 to May 2012. 24,000 USD. 30 hours/ week

19. Principal Investigator IDRI grant " Phase 111 clinical Trial to evaluate the efficacy of rK28 based ICT for diagnosis of Visceral Leishmaniasis" Funded by IDRI, USA. 2012-2015.

20. Principal Investigator: Development and evaluation of new diagnostic tests for Visceral Leishmaniasis. Foundation for Innovative new Diagnostics (FIND). 2014-2015

21-Co-investigator: Evaluation of Fluconazole for treatment of Mycetoma. DNDi 2015-2017.

22. Prinicipla Investigator: Evaluation of Rapid detection test for diagnosis of cutaneous leishmaniasis: a multi center study. Foundation for Innovation New Diagnostics (FIND); 2016-2017

23. Co-investigator: Pharmaco-epidemiology of Visceral leishmaniasis. DNDi 2016-2017.

24. Principal investigator WHO/TDR/EMRO grant on GIS mapping of P. vivax malaria in eastern and central Sudan; 2015-2016

Administration experience

1. Director, Institute of Endemic Diseases, University of Khartoum, 2003 to 2006
2. Acting Director, Institute of Endemic Diseases, June 2000 to February 2003.
3. Acting Director, Institute of Endemic Diseases, University of Khartoum.1 October 1997 to 1 January 1998.
4. Head, Department of Molecular Biology, Institute of Endemic Diseases, University of Khartoum, June 1994 to now.
5. Secretary Department of preventive Medicine and Public Health Faculty of veterinary Science,University of Khartoum,February 1993 to February 1994.
6. Secretary Faculty Research Board, Faculty of Veterinary Science, University of Khartoum, June 1990 to September 1992.
7. Assistant Director, Parasitic diseases research laboratory, Tropical Medicine Research Institute, National center for Research, June 1993 to June 1995.

Steering Committee Membership:

1. Co-chair: Human African Trypanosomiasis, Leishmaniasis and Chagas Disease reference group, TDR/ WHO May 2009 to May 20111. Member of The World Health Organization (WHO)/ TDR Steering Committee on Research Capability Strengthening, 1999 to 2001.
2. WHO temporary advisor and steering Committee member on Measles March 2002.
3. Member of Country coordination Committee Sudan for the Global Fund 2005 to now.
4. Member of the National Research Council, Federal Ministry of Health, Khartoum, Sudan.
5. Member of National Ethical Committee Federal Ministry of Health Sudan

Societies membership :

1. American society of Microbiology.

2. Sudanese society of Tropical Medicine and Hygiene.

Publications

1. Chemotactic response of Equine polymorphonuclear neutrophils to Streptococcus equi. **Maowia M. Mukhtar** and John F. Timoney. 1987.

Research Veterinary Science. 45: 225-229.

2. M Proteins of Equine group C Streptococci. John F. Timoney, **Maowia M. Mukhtar**;Jorge Galan; and Jiabing Ding. 1990.

In Genetics and Molecular Biology of Streptococcus, Lactococci and Enterococci. Edited by Gary M. Dunny and Patrick Cleary, St. Paul Minnesota, USA.

3. Variability in the M proteins of Equine strains of streptococcus equi subspecies zooepidemicus. John F. Timoney and **Maowia M. Mukhtar**. 1991.

Proceedings of the 6th International conference of Equine infectious diseases, USA.

4. Suppression of egg production in Schistosoma bovis by vaccination with either Glutathione-S-transferase or Keyhole limbet hemocyanin.

H.O. Bushara, M.E. Beshir; **Maowia M. Mukhtar**; A. Capron, and M. G. Taylor. 1992. Parasite Immunology 44: 242-248.

5. The Protective M Proteins of equine group C streptococci.

Timoney J.F. and **Mukhtar M.M.** 1993. Veterinary Microbiology 37(3-4): 389 – 394.

6. Evaluation of defined vaccine against S. bovis and S. Japonicum in Bovines. Beshir, M.E.; Bickle, O.; Bushara, H.O.; Cook,L.; Fuhui, S.; He, D.; Huggins, M.; Lin, J.; Malik. K.; Moloney, A.; **Mukhtar, M.;** Ye, P.; Xu, S.; Taylor, M.; and Shi, Y. 1994. Tropical and Geographical Medicine, 46: 255-258.

7. Application of Molecular Biological techniques for detection of Epizootic hemorrhagic diseases virus (EHDV-318) recovered from sentinel calf in central Sudan. Mohamed, M.E.H.; Aradiab, I.E.; **Mukhtar, M. M.**; Ghalib, H.W.; Rieman, H.P.; Oyejide, A.; and Osburn, B.I. 1996. Veterinary Microbiology. 52: 201- 208.

8. Mastitis in Camelus dromedarius and the somatic cell contents of camel's milk. A. I. Obied,; H.O. Bagadi; and **Maowia M. Mukhtar**. 1996.

Research Veterinary Science. 61(1): 55-58.

9. Serogrouping and topotyping of Sudanese and United States of strains of Epizootic hemmorrhagic disease virus using Polymerase Chian Reaction. Aradiab, I.E.; Mohamed, M.E.H.; **Mukhtar M.M**.; Ghalib, H.W.; and Osburn, B.I. 1997. Comparative Immunology and Infectious Diseases. 63- 67.

10. The proliferative response by chick lymphocytes following vaccination with Newcastle disease, Infectious Bursal Disease and Fowlpox virus antigens. A.S. Ali,; **M.M. Mukhtar** and M.E. H. Mohammed. 1997.

Journal Veterinary Malaysia. 9 (2):77- 81.

11. The Burden of Onchocerca volvulus on Sudan. **Maowia M. Mukhtar**; Musa, M. Khier; Omer Z. Baraka; and M.M.A. Homieda. 1998. Annals Tropical Medicine and Parasitology. 92 (1):129- 131.

12. Prevalence of multiple antibiotic resistance among bovine mastitis pathogens in Khartoum State, Sudan.

Victor L. Kwajock, H.O. Bagadi; P. Shears and **Maowia M. Mukhtar**. 1999. Sudan J. Vet. Sci. Animal Husb. 38 (1-2): 64-69.

13. A comparative study of protein and antigen profiles of Onchocerca gutturosa and Onchocerca volvulus isolates from Sudan. Tarrig B. Higazi; S. Younis and **M. M. Mukhtar**. 1999. Sudan J. Vet. Sci. Animal Husb. 38 (1-2): 124 – 130.

14. A study of the urban malaria transmission problem in Khartoum.

Badria B. Elsayed; David A. Arnot; **Maowia M. Mukhtar**; Omer Z. Baraka; Asim A. Dafalla; Dia Eldin Elnaiem, and Abdel Hamid D. Nugud.

Acta Tropica. 75 (2000) 163-171.

15. Detection of antibodies to Leishmania donovani in Visceral leishmaniasis endemic area in Eastern Sudan. **Maowia M. Mukhtar**, Sherief,A.; Elsaffi, S.H.; Harith, A. and Abdalla H.S. 2000. Transactions of the Royal Society of Tropical Medicine and Hygiene. 94: 1- 4.

16. Measles in the Sudan: Serological and Virological characterization of clinical cases. Elmbarak, H.S.; van de Bildt; O.A. Mustafa; Vos,H.W., **Mukhtar, M.M.**, et al. 2000. Journal of Clinical Microbiology. 38(3): 987 – 991.

17. Development of a species specific PCR- Restriction Fragment Length Polymorphism Analysis procedure for identification of Madurella mycetomatis. Abdalla O.A. Ahmed, **Maowia M. Mukhtar**; et al 1999.

Journal Clinical Microbiology 37(10): 3175 – 3178.

18. RNA genome profiles of Sudanese isolates of Palyam virus by serogrouping using PAGE and agarose – gel electrophoresis.

M.E.H. Mohamed; K.E.E. Ibrahim; **M.M. Mukhtar**; A.E. Karrar; B.I. Osburn and I.E. Aradaib. 1999. Sud.J.Vet.Sci.Animal Husb. (38(1-2): 30-35.

19- Specific antibodies of Pasteurella multocida in newborn calves of vaccinated dams. Erragi, A.M.S.; **Mukhtar, M. M.** and Babiker, S.H. 2001. Tropical Animal Health and Production. 33(2001): 275-283.

20. Cytotaxonomic and molecular analysis of Simulium (Edwadsellum) damnosum sensu lato (Diptra: Simuliidae) from Abuhamad, Sudan.

Tarig, B. Higazi, Daniel A. Boakye; Michael D. Willson; Babiker M. Mahmoud; Omer Z. Baraka; **Maowia M. Mukhtar** et al. 2000.

J. Med. Entomology: 37(4):547 – 554.

21. Effect of single doses Praziquantel on morbidity and mortality of intestinal Schistosomiasis.

Musa M. Kheir. Omer,Z, Baraka, Isam A. Eltom, **Maowia M. Mukhtar** and Mamoum M.A. Homieda. 2000.

Accepted Eastern Mediterranean Health Journal.

22. Safety and immunogenicity of an autoclaved Leishmania major vaccine.

E.A.G. Khalil; A.M.Elhassan; E.E. Zijlstra; O.F. Osman; I.A. Eljack; M.E. Ibrahim; **M.M. Mukhtar**; H.W. Ghalib, and F.M. Modabber. 2000.

East African Medical Jouranl. October, 2000.

23. Autoclaved Leishmania major vaccine for prevention of visceral leishmaniasis: a randomized, double blind, BCG controlled trial in Sudan.

E.A.G. Khalil; A.M. Elhassan; E.E. Zijlstra; **M.M. Mukhtar**; H.W. Ghalib; Breyma Musa; M.E. Ibrahim; Areeg, A. Kamil; M. Elshiekh; A. Babikir; F. Modabber, 2000.

The Lancet Vol.356; November 4: 1565 – 1569.

24. Prevention of measles in Sudan: a prospective study on vaccination, diagnosis and Epidemiology. Rik L. de Swart; Sittana El Mubarak; Helma, W. Vos; Omer, M. Mustafa; Abdalaah Abdallah; Jan Groen; **Maowia M. Mukhtar**; Edward, E. Zijlstra,; Ahmed, M. Elhassan; Fabian, T. Wild; Salah, A. Ibrahim and Abert, D.M.E. Osterhaus. Vaccine 19(2001): 2254 – 2257.

25. The stimulatory effect of Newcastle disease virus one chicken lymphocytes.

A.S. Ali and **M.M. Mukhtar**. 2001. Sudan J.Vet. Sci.Animal. Husb. 40 (1-2): 22 – 25.

26. *Onchocerca volvulus*: genetic diversity of parasite isolates from Sudan.

Higazi, T.B.; Katholi, C.R.; Mahmoud, B.M.; Baraka, O.Z.; **Mukhtar, M.M**.; Qubati, Y.A.; and Unnasch, T.R. Exp. Parasitology, 2001 Jan;97(1):24-34.

27. Immunostimultory effects of Levamisole and Egg White Powder on humoral and cellular immunity to Newcastle diseases vaccination. M.O. Abdalla; M.E. H. Mohammed; A.S. Ali; **M.M. Mukhtar** and M.L. Mohd-Azmi. 1999. Malasian Applied Biology. 28(1 & 2):73-77.

28. Specific antibodies of Pasteurella multocida in newborn calves of vaccinated dams. El-Eragi, A.M.; **Mukhtar,M.M**. and Babiker,S.H. 2001. Trop Anim Health Prod. 2001 Jul;33(4):275-83.

29. Detection of antibodies against Peste des petitis ruminants virus in sera of cattle, camel, sheep and goats in Sudan. Haroun, M. I.; Hajer, I.E.; **Mukhtar, M.M**.; and Ali, B.E. 2002. Vet. Res. Communications. 26 (2002) 1 -5.

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