**UDC 636.09:616.9:579.841.93:636.2**

**A CASE OF BRUCELLOSIS IN CATTLE IN THE CASABLANCA-SETTAT REGION, MOROCCO**

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**References**

1. Ahmed M.O, Elmeshri S.E, Abuzweda A.R, Blauo M, Abouzeed Y.M, Ibrahim A, Salem H, Alzwam F, Abid S, Elfahem A, Elrais A. (2010) Seroprevalence of brucellosis in animals and human populations in the Western Mountains Region in Libya, December 2006-January 2008. *Eur. Surveill.*2010;15(30):19625.
2. Alhoshani R, Ali S, Irfan U.M. (2016) Brucellosis seropositivity among adults in Al Rass city, Qassim Province, Saudi Arabia. *Int. J. Med. Invest.*2016;5(4):158–164.
3. Al-Shamahy H.A, Whitty C.J, Wright S.G. (2000) Risk factors for human brucellosis in Yemen: A case contrôle study. *Epidemiol. Infect.*2000;125(2):309–313.
4. Azami H.Y, Ducrotoy M.J, Bouslikhane M, Hattendorf J, Thrusfield M, lvarez R.C.A, Moriyon I, Niga-Ripa A.Z, lvaro P.M.M, Mick V, Bryssinckx W, Welburn S.C, Zinsstag J. (2018) The prevalence of brucellosis and bovine tuberculosis in ruminants in Sidi Kacem Province, Morocco. *PLoS One.*2018;2(9):0203360.
5. Cadmus S.I.B, Ijagbone I.F, Oputa H.E, Adesokan H.K, Stack J.A. (2006) Serological survey of brucellosis in livestock animals and workers in Ibadan, Nigeria. *Afr. J. Biomed. Res.*2006;9(3):163–168.
6. Cash-Goldwasser S, Maze M.J, Rubach M.P, Biggs H.M, Stoddard R.A, Sharples K.J, Halliday J.E.B, Cleaveland S, Shand M.C, Mmbaga B.T, Muiruri C, Saganda W, Lwezaula B.F, Kazwala R.R, Maro V.P, Crump J.A. (2018) Risk factors for human brucellosis in Northern Tanzania. *Am. J. Trop. Med. Hyg.*2018;98(2):598–606.
7. Dean A.S, Bonfoh B, Kulo A.E, Boukaya G.A, Amidou M, Hattendorf J, Pilo P, Schelling E. (2013) Epidemiology of brucellosis and Q FEVER in linked human and animal populations in northern Togo. *PLoS One.*2013;2(8):71501.
8. Ducrotoy M.J, Ammary K, Ait Lbacha H, Zouagui Z, Mick V, Prevost L, Bryssinckx W, Welburn S.C, Benkirane A.(2015) Narrative overview of animal and human brucellosis in Morocco : Intensification of livestock production as a driver for emergence? *Infect*. *Dis. Poverty.*2015;4:57.
9. Godfroid J, Kasbohrer A. (2002) Brucellosis in the European Union and Norway at the turn of the twenty-first century. *Vet. Microbiol.*2002;90((1–4)):135–145.
10. [Ignacio Moriyón](https://sciprofiles.com/profile/2036004?utm_source=mdpi.com&utm_medium=website&utm_campaign=avatar_name), [José María Blasco](https://sciprofiles.com/profile/1319392?utm_source=mdpi.com&utm_medium=website&utm_campaign=avatar_name), [Jean Jacques Letesson](https://sciprofiles.com/profile/author/VFYwZ1V2eTBrSkEyRVU2ZllPMU9STWNIZk5KSldQVW56MjRFcFlnYjBnaz0%3D?utm_source=mdpi.com&utm_medium=website&utm_campaign=avatar_name), [Fabrizio De Massis](https://sciprofiles.com/profile/2213710?utm_source=mdpi.com&utm_medium=website&utm_campaign=avatar_name), [Edgardo Moreno](https://sciprofiles.com/profile/1974819?utm_source=mdpi.com&utm_medium=website&utm_campaign=avatar_name) (2023) Brucellosis and One Health: Inherited and Future Challenges Microorganisms.  The Special Issue [Epidemiology and ControlStrategiesforBrucellosis](Epidemiology%20and%20ControlStrategiesforBrucellosis)2023, 11(8),2070; <https://doi.org/10.3390/microorganisms11082070>.
11. [Kaoutar Faddane](https://pubmed.ncbi.nlm.nih.gov/?term=Faddane%20K%5BAuthor%5D), [Houda Moumni](https://pubmed.ncbi.nlm.nih.gov/?term=Moumni%20H%5BAuthor%5D), [Imad Cherkaoui](https://pubmed.ncbi.nlm.nih.gov/?term=Cherkaoui%20I%5BAuthor%5D), [Mohammed Lakranbi](https://pubmed.ncbi.nlm.nih.gov/?term=Lakranbi%20M%5BAuthor%5D), [Salsabil Hamdi](https://pubmed.ncbi.nlm.nih.gov/?term=Hamdi%20S%5BAuthor%5D), [Sayeh Ezzikouri](https://pubmed.ncbi.nlm.nih.gov/?term=Ezzikouri%20S%5BAuthor%5D), [Rachid Saile](https://pubmed.ncbi.nlm.nih.gov/?term=Saile%20R%5BAuthor%5D), and [Mohamed El Azhari](https://pubmed.ncbi.nlm.nih.gov/?term=Azhari%20ME%5BAuthor%5D) (2022) Seroprevalence of human brucellosis in Morocco and associated risk factors. [Vet World.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9631368/) 2022 Sep; 15(9): 2224–2233. doi: [10.14202/vetworld.2022.2224-2233](https://doi.org/10.14202/vetworld.2022.2224-2233)
12. Khbou M.K, Htira S, Harabech K, Benzarti M. (2018) First case-control study of zoonotic brucellosis in Gafsa district, Southwest Tunisia. *One Health.*2018;5:21–26.
13. Lounes N, Cherfa M.A, Le Carrou G, Bouyoucef A, Jay M, Garin-Bastuji B, Mick V.(2014) Human brucellosis in Maghreb: Existence of a lineage related to socio-historical connections with Europe. *PLoS One.*2014;2(12):115319.
14. Mailles A, Garin-Bastuji B, Lavigne J.P, Jay M, Sotto A, Maurin M, Pelloux I, O'Callaghan D, Mick V, Vaillant V, De Valk H. (2016) Human brucellosis in France in the 21st century:Results from national surveillance 2004–2013. *Med. Mal. Infect.*2016;46(8):411–418.

# [Marie J. Ducrotoy](https://idpjournal.biomedcentral.com/articles/10.1186/s40249-015-0086-5#auth-Marie_J_-Ducrotoy-Aff1), [Khaoula Ammary](https://idpjournal.biomedcentral.com/articles/10.1186/s40249-015-0086-5#auth-Khaoula-Ammary-Aff2), [Hicham Ait Lbacha](https://idpjournal.biomedcentral.com/articles/10.1186/s40249-015-0086-5#auth-Hicham-Ait_Lbacha-Aff2), [Zaid Zouagui](https://idpjournal.biomedcentral.com/articles/10.1186/s40249-015-0086-5#auth-Zaid-Zouagui-Aff2), [Virginie Mick](https://idpjournal.biomedcentral.com/articles/10.1186/s40249-015-0086-5#auth-Virginie-Mick-Aff3), [Laura Prevost](https://idpjournal.biomedcentral.com/articles/10.1186/s40249-015-0086-5#auth-Laura-Prevost-Aff4), [Ward Bryssinckx](https://idpjournal.biomedcentral.com/articles/10.1186/s40249-015-0086-5#auth-Ward-Bryssinckx-Aff4), [Susan C. Welburn](https://idpjournal.biomedcentral.com/articles/10.1186/s40249-015-0086-5#auth-Susan_C_-Welburn-Aff1) & [Abdelali Benkirane](https://idpjournal.biomedcentral.com/articles/10.1186/s40249-015-0086-5#auth-Abdelali-Benkirane-Aff2) (2015) Narrative overview of animal and human brucellosis in Morocco: intensification of livestock production as a driverforemergence?[InfectiousDiseasesofPoverty](https://www.proquest.com/openview/9e4186151e5b4b6c447ca10706d07566/1?pq-origsite=gscholar&cbl=2040227)**;London**[Том 4,](https://www.proquest.com/indexingvolumeissuelinkhandler/2040227/Infectious%2BDiseases%2Bof%2BPoverty/02015Y01Y01%24232015%243b%2B%2BVol.%2B4/4/%24B;jsessionid=369AA12C29B4DC053D736737EF2535A5.i-073e89b169e343e85" \o "Нажмите для поиска других элементов из этого выпуска)(2015): <https://www.proquest.com/openview/9e4186151e5b4b6c447ca10706d07566/1?pq-origsite=gscholar&cbl=2040227>

1. Manual of Diagnostic Tests and Vaccinesfor Terrestrial Animals, twelfth edition 2023. <https://www.woah.org/fileadmin/Home/eng/Health_standards/tahm/A_summry.htm>
2. [Nawana](https://www.ijidonline.com/article/S1201-9712%2821%2901070-5/fulltext) T., [Ezzine](https://www.ijidonline.com/article/S1201-9712%2821%2901070-5/fulltext) H., [Cherkaoui](https://www.ijidonline.com/article/S1201-9712%2821%2901070-5/fulltext) I., [Meski](https://www.ijidonline.com/article/S1201-9712%2821%2901070-5/fulltext) F.Z., [Youbi](https://www.ijidonline.com/article/S1201-9712%2821%2901070-5/fulltext) M. (2022) Brucellosis at the human-animal interface, Morocco, 2002-20192019. : International Journal of Infectious Diseases 116 (2022) S1–S130.

<https://doi.org/10.1016/j.ijid.2021.12.178>.

1. Olsen S.C, Palmer M.V. (2014) Advancement of knowledge of *Brucella* over the past 50 years. *Vet. Pathol.*2014;51(6):1076–1089.

doi: 10.1177/0300985814540545.

1. [Seraphine Mojoko Eko](https://www.scirp.org/journal/articles.aspx?searchCode=Seraphine+Mojoko+Eko&searchField=authors&page=1), [Seraphine Nkie Esemu](https://www.scirp.org/journal/articles.aspx?searchCode=Seraphine+Nkie+Esemu&searchField=authors&page=1" \t "_blank), [Anong Damian Nota](https://www.scirp.org/journal/articles.aspx?searchCode=Anong+Damian+Nota&searchField=authors&page=1" \t "_blank), [Lucy Mande Ndip](https://www.scirp.org/journal/articles.aspx?searchCode=Lucy+Mande+Ndip&searchField=authors&page=1) (2022). [A Review on Brucellosis in Cameroon: Diagnostic Approaches, Epidemiology and Risk Factors for Infection](https://www.scirp.org/journal/paperinformation.aspx?paperid=118687). [**Advances in Microbiology**](https://www.scirp.org/journal/home.aspx?journalid=1000), [Vol.12 No.7](https://www.scirp.org/journal/home.aspx?issueid=16888), July 22, 2022. DOI: [10.4236/aim.2022.127030](https://doi.org/10.4236/aim.2022.127030).
2. Ahmed M.O, Elmeshri S.E, Abuzweda A.R, Blauo M, Abouzeed Y.M, Ibrahim A, Salem H, Alzwam F, Abid S, Elfahem A, Elrais A. (2010) Seroprevalence of brucellosis in animals and human populations in the Western Mountains Region in Libya, December 2006-January 2008. *Eur. Surveill.*2010;15(30):19625.
3. Alhoshani R, Ali S, Irfan U.M. (2016) Brucellosis seropositivity among adults in Al Rass city, Qassim Province, Saudi Arabia. *Int. J. Med. Invest.*2016;5(4):158–164.
4. Al-Shamahy H.A, Whitty C.J, Wright S.G. (2000) Risk factors for human brucellosis in Yemen: A case contrôle study. *Epidemiol. Infect.*2000;125(2):309–313.
5. Azami H.Y, Ducrotoy M.J, Bouslikhane M, Hattendorf J, Thrusfield M, lvarez R.C.A, Moriyon I, Niga-Ripa A.Z, lvaro P.M.M, Mick V, Bryssinckx W, Welburn S.C, Zinsstag J. (2018) The prevalence of brucellosis and bovine tuberculosis in ruminants in Sidi Kacem Province, Morocco. *PLoS One.*2018;2(9):0203360.
6. Cadmus S.I.B, Ijagbone I.F, Oputa H.E, Adesokan H.K, Stack J.A. (2006) Serological survey of brucellosis in livestock animals and workers in Ibadan, Nigeria. *Afr. J. Biomed. Res.*2006;9(3):163–168.
7. Cash-Goldwasser S, Maze M.J, Rubach M.P, Biggs H.M, Stoddard R.A, Sharples K.J, Halliday J.E.B, Cleaveland S, Shand M.C, Mmbaga B.T, Muiruri C, Saganda W, Lwezaula B.F, Kazwala R.R, Maro V.P, Crump J.A. (2018) Risk factors for human brucellosis in Northern Tanzania. *Am. J. Trop. Med. Hyg.*2018;98(2):598–606.
8. Dean A.S, Bonfoh B, Kulo A.E, Boukaya G.A, Amidou M, Hattendorf J, Pilo P, Schelling E. (2013) Epidemiology of brucellosis and Q FEVER in linked human and animal populations in northern Togo. *PLoS One.*2013;2(8):71501.
9. Ducrotoy M.J, Ammary K, Ait Lbacha H, Zouagui Z, Mick V, Prevost L, Bryssinckx W, Welburn S.C, Benkirane A.(2015) Narrative overview of animal and human brucellosis in Morocco : Intensification of livestock production as a driver for emergence? *Infect*. *Dis. Poverty.*2015;4:57.
10. Godfroid J, Kasbohrer A. (2002) Brucellosis in the European Union and Norway at the turn of the twenty-first century. *Vet. Microbiol.*2002;90((1–4)):135–145.
11. [Ignacio Moriyón](https://sciprofiles.com/profile/2036004?utm_source=mdpi.com&utm_medium=website&utm_campaign=avatar_name), [José María Blasco](https://sciprofiles.com/profile/1319392?utm_source=mdpi.com&utm_medium=website&utm_campaign=avatar_name), [Jean Jacques Letesson](https://sciprofiles.com/profile/author/VFYwZ1V2eTBrSkEyRVU2ZllPMU9STWNIZk5KSldQVW56MjRFcFlnYjBnaz0%3D?utm_source=mdpi.com&utm_medium=website&utm_campaign=avatar_name), [Fabrizio De Massis](https://sciprofiles.com/profile/2213710?utm_source=mdpi.com&utm_medium=website&utm_campaign=avatar_name), [Edgardo Moreno](https://sciprofiles.com/profile/1974819?utm_source=mdpi.com&utm_medium=website&utm_campaign=avatar_name) (2023) Brucellosis and One Health: Inherited and Future Challenges Microorganisms.  The Special Issue [Epidemiology and ControlStrategiesforBrucellosis](Epidemiology%20and%20ControlStrategiesforBrucellosis)2023, 11(8),2070; <https://doi.org/10.3390/microorganisms11082070>.
12. [Kaoutar Faddane](https://pubmed.ncbi.nlm.nih.gov/?term=Faddane%20K%5BAuthor%5D), [Houda Moumni](https://pubmed.ncbi.nlm.nih.gov/?term=Moumni%20H%5BAuthor%5D), [Imad Cherkaoui](https://pubmed.ncbi.nlm.nih.gov/?term=Cherkaoui%20I%5BAuthor%5D), [Mohammed Lakranbi](https://pubmed.ncbi.nlm.nih.gov/?term=Lakranbi%20M%5BAuthor%5D), [Salsabil Hamdi](https://pubmed.ncbi.nlm.nih.gov/?term=Hamdi%20S%5BAuthor%5D), [Sayeh Ezzikouri](https://pubmed.ncbi.nlm.nih.gov/?term=Ezzikouri%20S%5BAuthor%5D), [Rachid Saile](https://pubmed.ncbi.nlm.nih.gov/?term=Saile%20R%5BAuthor%5D), and [Mohamed El Azhari](https://pubmed.ncbi.nlm.nih.gov/?term=Azhari%20ME%5BAuthor%5D) (2022) Seroprevalence of human brucellosis in Morocco and associated risk factors. [Vet World.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9631368/) 2022 Sep; 15(9): 2224–2233. doi: [10.14202/vetworld.2022.2224-2233](https://doi.org/10.14202/vetworld.2022.2224-2233)
13. Khbou M.K, Htira S, Harabech K, Benzarti M. (2018) First case-control study of zoonotic brucellosis in Gafsa district, Southwest Tunisia. *One Health.*2018;5:21–26.
14. Lounes N, Cherfa M.A, Le Carrou G, Bouyoucef A, Jay M, Garin-Bastuji B, Mick V.(2014) Human brucellosis in Maghreb: Existence of a lineage related to socio-historical connections with Europe. *PLoS One.*2014;2(12):115319.
15. Mailles A, Garin-Bastuji B, Lavigne J.P, Jay M, Sotto A, Maurin M, Pelloux I, O'Callaghan D, Mick V, Vaillant V, De Valk H. (2016) Human brucellosis in France in the 21st century:Results from national surveillance 2004–2013. *Med. Mal. Infect.*2016;46(8):411–418.

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1. Manual of Diagnostic Tests and Vaccinesfor Terrestrial Animals, twelfth edition 2023. <https://www.woah.org/fileadmin/Home/eng/Health_standards/tahm/A_summry.htm>
2. [Nawana](https://www.ijidonline.com/article/S1201-9712%2821%2901070-5/fulltext) T., [Ezzine](https://www.ijidonline.com/article/S1201-9712%2821%2901070-5/fulltext) H., [Cherkaoui](https://www.ijidonline.com/article/S1201-9712%2821%2901070-5/fulltext) I., [Meski](https://www.ijidonline.com/article/S1201-9712%2821%2901070-5/fulltext) F.Z., [Youbi](https://www.ijidonline.com/article/S1201-9712%2821%2901070-5/fulltext) M. (2022) Brucellosis at the human-animal interface, Morocco, 2002-20192019. : International Journal of Infectious Diseases 116 (2022) S1–S130.

<https://doi.org/10.1016/j.ijid.2021.12.178>.

1. Olsen S.C, Palmer M.V. (2014) Advancement of knowledge of *Brucella* over the past 50 years. *Vet. Pathol.*2014;51(6):1076–1089.

doi: 10.1177/0300985814540545.

1. [Seraphine Mojoko Eko](https://www.scirp.org/journal/articles.aspx?searchCode=Seraphine+Mojoko+Eko&searchField=authors&page=1), [Seraphine Nkie Esemu](https://www.scirp.org/journal/articles.aspx?searchCode=Seraphine+Nkie+Esemu&searchField=authors&page=1" \t "_blank), [Anong Damian Nota](https://www.scirp.org/journal/articles.aspx?searchCode=Anong+Damian+Nota&searchField=authors&page=1" \t "_blank), [Lucy Mande Ndip](https://www.scirp.org/journal/articles.aspx?searchCode=Lucy+Mande+Ndip&searchField=authors&page=1) (2022). [A Review on Brucellosis in Cameroon: Diagnostic Approaches, Epidemiology and Risk Factors for Infection](https://www.scirp.org/journal/paperinformation.aspx?paperid=118687). [**Advances in Microbiology**](https://www.scirp.org/journal/home.aspx?journalid=1000), [Vol.12 No.7](https://www.scirp.org/journal/home.aspx?issueid=16888), July 22, 2022. DOI: [10.4236/aim.2022.127030](https://doi.org/10.4236/aim.2022.127030).