

Deadly Pandemia: Monkeypox Disease, a Case Study

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The double-stranded enveloped DNA virus known as the Monkeypox virus (MPXV), a member of the family Orthopoxvirus, is responsible for the reemerging zoonosis known as monkeypox. Variola virus, which causes smallpox, is related to MPXV. Infected sores, body fluids, blood, aerosols, and direct animal contact are the main ways that monkeypox is spread. Additionally, it may be transmitted by close human contact or respiratory secretions that resemble smallpox in terms of clinical traits and the development of serologically cross-reactive immunity.

Monkeypox has an incubation period of 7 to 21 days before symptoms like fever, headache, and cough appear. After that, there is typically a skin rash on the face and extremities, along with fever over the next one to three days.

Since the first verified case in the UK on May 7, 2022 [1], the monkeypox outbreak has spread to 13 nations and has drastically risen. Monkeypox is a potential public health issue that requires an appropriate response to stop an outbreak.

Monkeypox may remain in a semi-endemic equilibrium, where there is no infection in its animal host but the disease endures in people, according to mathematical modeling of an available literature [2].

Since there is no effective vaccination or medication to treat monkeypox, it is managed as a syndrome by controlling symptoms and reducing or eliminating sequelae.

According to earlier studies, the smallpox vaccine offers 85% protection against monkeypox. In addition, Tecovirimat (Tpoxx[®]), antiviral medication for smallpox, was approved by the European Medical Association (EMA) in 2022 to treat monkeypox based on both animal and human research. Tecovirimat, commonly known as Arestvyr[™] (formerly ST-246), was discovered to be a powerful and selective inhibitor of multiple *Orthopoxvirus* replication [3]. However, preventive health practices including using proper hand hygiene and avoiding contact with infected animals or people are still preferable for illness prevention [4,5].

Monkeypox should be recognized as a possible hazard to public health in need of proper containment and investigation in this era of pandemics, despite the mild clinical course and low transmission rate [6].

Given the ongoing COVID-19 pandemic and the possibility of a co-infection with the monkeypox virus, it is crucial to take into account the recent spread of monkeypox [7]. Changes in one or both of the illnesses' infectivity patterns, severity, management, or vaccine response may follow [8]. That might also have a detrimental effect on how effectively the diagnostic tests used to diagnose the two diseases [9]. Additionally, the interaction between the two viruses may promote the creation of a novel SARS-CoV-2 variant of concern (VOC) [10], which could

have characteristics that would complicate the present pandemic management measures and put a strain on the entire healthcare system [11-14].

Studies have outlined and emphasized the likely causes that could cause the monkeypox virus to spread widely over the world [15-18]. Since the disastrous impacts of COVID-19 are still so vivid in the collective human mind [14], resolving these concerns must be done immediately in to avert another pandemic [19-21].

It is important to remember the lessons from the COVID-19 epidemic and to quickly adapt and use them [22-25]. "COVID-19 slowed us down, but what have we learned?" as author Donna Maltz puts it in her book "Conscious Cures: Solutions to 21st Century Pandemics [26-30]." We had some time to contemplate thanks to the virus, but what are we thinking? These are important topics that we should all think about in relation to the monkeypox virus before it is too late [31-33].

Conclusion

Although there are licensed medications and vaccines that offer promise for slowing the spread and course of monkeypox epidemics, such preventative treatments are not currently widely accessible. It is still too early to tell whether the present monkeypox outbreak is a standalone occurrence or whether the COVID-19 pandemic has made it worse. Because of this uncertainty, healthcare authorities must move cautiously to prevent epidemics before the alarm bell begins to ring louder as cases rise and contact with other infectious agents, not least SARS-CoV-2, results in the creation of variants with increased pathogenicity.

References

- [1] Monkeypox outbreak questions intensify as cases soar in 2022. <https://www.science.org/content/article/monkeypox-outbreak-questions-intensify-cases-soar>. Accessed 22 May 2022.
- [2] Bankuru SV, Kossol S, Hou W, Mahmoudi P, Rychtár J, Taylor D. A game-theoretic model of Monkeypox to assess vaccination strategies. *PeerJ* 2020; 8:e9272.
- [3] Didunyemi MO, Adetuyi BO, Oyebanjo OO (2019). Morinda lucida attenuates acetaminophen-induced oxidative damage and hepatotoxicity in rats, *Journal of Biomedical sciences Vol 8*; <https://www.jbiomed.com/biomedical-sciences/morinda-lucida-attenuates-acetaminophen-induced-oxidative-damage-and-hepatotoxicity-inrats.php?aid=24482>
- [4] Merchlinsky, M., Albright, A., Olson, V., Schiltz, H., Merkeley, T., Hughes, C. & Challberg, M. (2019). The development and approval of tecoviromat (TPOXX®), the first antiviral against smallpox. *Antiviral Research*, 168, 168-174.
- [5] Awoyelu EH, Oladipo EK, Adetuyi BO, Senbadejo TY, Oyawoye OM, Oloke JK (2020). Phylogenetic analysis of SARS-CoV-2 in Nigeria. *New Microbes and New Infections* Vol 36. 100717. <https://doi.org/10.1016/j.nmni.2020.100717>
- [6] Dorcas Aanuoluwapo Adeleke, Peace Abiodun Olajide, Oluwakemi Semiloore Omowumi, Darasimi Deborah Okunlola, Anjolaoluwa Maryann Taiwo and Babatunde Oluwafemi Adetuyi (2022). Effect of Monosodium Glutamate on the Body System. *World News of Natural Sciences* 44: 1-23
- [7] Babatunde Oluwafemi Adetuyi, Oluwaseun Abraham Adebisi, Oluwatosin Adefunke Adetuyi, Olubanke Olujoke Ogunlana, Pere-Ebi Toloyai, Chukwuebuka Egbuna, Chukwuemeli Zedech Uche, Johra Khan, Obinna Chukwuemeka Uchenna Adumanya, Kingsley C Patrick-Iwuanyanwu (2022), Ficus exasperata Attenuates Acetaminophen-Induced Hepatic Damage via NF-κB Signaling Mechanism in Experimental Rat Model *BioMed Research International*, 2022 (11) <https://doi.org/10.1155/2022/6032511>
- [8] Farahat, R. A., Abdelaal, A., Shah, J., Ghozy, S., Sah, R., Bonilla-Aldana, D. K., Leblebicioglu, H. (2022). Monkeypox outbreaks during COVID-19 pandemic: are we looking at an independent phenomenon or an overlapping pandemic? *Annals of clinical microbiology and antimicrobials*, 21(1), 1-3.
- [9] Babatunde Oluwafemi Adetuyi, Pere-Ebi Yabrade Toloyai, Evelyn Tarela Ojugbeli, Oyetola Tolulope Oyebanjo, Oluwatosin Adefunke Adetuyi, Chukwuemeli Zedech Uche, Michael Chinedu Olisah,

- Obinna Chukwuemeka Uchenna Adumanya, Chukwudi Jude, Johra Khan Chikwendu, Muhammad Akram, Chinaza Godswill Awuchi, Chukwuebuka Egbuna (2021). Neurorestorative Roles of Microgliosis and Astrogliosis in Neuroinflammation and Neurodegeneration. *Scicom Journal of Medical and Applied Medical Sciences* 1(1):1-5 <https://doi.org/10.54117/sjmams.v1i1.1>
- [10] Lai C-C, Wang C-Y, Hsueh P-R. Co-infections among patients with COVID-19: the need for combination therapy with non-anti-SARS-CoV-2 agents? *J Microbiol Immunol Infect.* 2020;53:505–512.
- [11] Babatunde O Adetuyi, Foluke K Omolabi, Peace A Olajide, Julius K Oloke (2021). Pharmacological, Biochemical and Therapeutic Potential of Milk Thistle (Silymarin): A Review *World News of Natural Sciences* 37:75-91
- [12] Aghbash PS, Eslami N, Shirvaliloo M, Baghi HB. Viral coinfections in COVID-19. *J Med Virol.* 2021; 93:5310–522.
- [13] Olubanke O. Ogunlana, Oluseyi E. Ogunlana, Jacob O. Popoola, Babatunde O. Adetuyi, Tobi S. Adekunbi, Opetoritse L. David, Oluwaseye J. Adeleye, Stephanie A. Udeogu, Alaba O. Adeyemi (2021). Twigs of *Andrographis paniculata* (Burn. F) Nees attenuates Carbon Tetrachloride (CCl₄) Induced Liver Damage in Wistar Albino Rats. *RASAYAN Journal of Chemistry* 14(4): 2598-2603 <https://doi.org/10.31788/RJC.2021.1445987>
- [14] Jain, N., Lansiaux, E., & Simanis, R. (2022). The New Face of Monkeypox Virus: An Emerging Global Emergency. *New Microbes and New Infections.*
- [15] Babatunde Oluwafemi Adetuyi, Peace Abiodun Olajide, Adefunke Oluwatosin, Julius Kola Oloke (2022) Preventive Phytochemicals of Cancer as Speed Breakers in Inflammatory Signaling. *Research Journal of Life Sciences, Bioinformatics, Pharmaceutical and Chemical Sciences* 8 (1) 30-61
- [16] Bunge EM, Hoet B, Chen L, Lienert F, Weidenthaler H, Baer LR, Steffen R. The changing epidemiology of human monkeypox-A potential threat? A systematic review. *PLoS Negl Trop Dis* 2022; 16(2):e0010141.
- [17] Adetuyi B.O, Oluwole E.O Dairo J.O (2015). Chemoprotective Potential of Ethanol Extract of *Ganoderma Lucidum* on Liver and Kidney Parameters in *Plasmodium Beghei*-Induced Mice, *International Journal of Chemistry and Chemical Processes* (IJCC). Vol 1(8):29-36
- [18] Adetuyi B.O, Oluwole E.O, Dairo J.O (2015). Biochemical effects of shea butter and groundnut oils on white albino rats, *International Journal of Chemistry and Chemical Processes* (IJCC). Vol 1(8):1-17
- [19] Adetuyi BO, Dairo JO, Didunyemi MO (2015). Anti-Hyperglycemic Potency of *Jatropha Gossypifolia* in Alloxan Induced Diabetes. *Biochem Pharmacol (Los Angel)* 4(5):193. doi:10.4172/2167-0501.1000193
- [20] Didunyemi MO, Adetuyi BO, Oyebanjo OO (2019). Morinda lucida attenuates acetaminophen-induced oxidative damage and hepatotoxicity in rats, *Journal of Biomedical sciences Vol 8; No* <https://www.jbiomed.com/biomedical-sciences/morinda-lucida-attenuates-acetaminophen-induced-oxidative-damage-and-hepatotoxicity-in-rats.php?aid=24482>
- [21] BO Adetuyi, PA Olajide, EH Awoyelu, OA Adetuyi, OA Adebisi, JK Oloke (2020), Epidemiology and Therapeutic measure for COVID-19; A review. *African Journal of Reproductive Health June 2020* (Special Edition on COVID-19); 24 (2):142 <https://www.ajrh.info/index.php/ajrh/article/view/2300>
- [22] Olubanke O. Ogunlana, Oluseyi E. Ogunlana, Tobi S. Adekunbi, Babatunde O. Adetuyi, Bose E. Adegboye, and Franklyn N. Iheagwam (2020). Anti-inflammatory Mechanism of Ruzu Bitters on Diet-Induced Nonalcoholic Fatty Liver Disease in Male Wistar Rats. *Evidence-Based Complementary and Alternative Medicine, 2020* <https://doi.org/10.1155/2020/5246725>
- [23] Babatunde Oluwafemi Adetuyi, Tolulope Olamide Okeowo, Oluwatosin Adefunke Adetuyi, Oluwaseun Abraham Adebisi, Olubanke Ogunlana, Oyeyemi Janet Oretade, Najat Marraiki, Amany Magdy Beshbishy, Nermeen N. Welson, Gaber ElSaber Batiha (2020). *Ganoderma lucidum* from red mushroom attenuates formaldehyde- induced liver damage in experimental male rat model. *Biology* 2020, 9(10), 313; <https://doi.org/10.3390/biology9100313>
- [24] BO Adetuyi, OA Adebisi, EH Awoyelu, OA Adetuyi, OO Ogunlana (2020) Phytochemical and Toxicological effect of Ethanol extract of *Heliotropium indicum* on Liver of Male Albino Rats.

- [25] Olubanke O. Ogunlana, Babatunde O. Adetuyi, Tobi S. Adekunbi, Bose E. Adegboye, Franklyn N. Iheagwam, Oluseyi E. Ogunlana (2021). Ruzu bitters ameliorates high-fat diet induced non-alcoholic fatty liver disease in male Wistar rats. *Journal of Pharmacy and Pharmacognosy Research* 9(3), 251-260
- [26] Gaber E. Batiha, Dina A Awad, Abdelazeem M. Algamma, Richard Nyamota, Mir I Wahed, Muhammad Ajmal Shah, Mohammad Nurul Amin, Babatubde O. Adetuyi, Helal F. Hetta, Natalia Cruz-Marins, Niranjana Koirala, Arabinda Ghosh, Jean-Marc Sabatier (2021). Dairy-derived and Egg White Proteins in Enhancing Immune System against COVID-19 *Frontiers in Nutrition. (Nutritional Immunology)* 8:629440 doi:10.3389/fnut.2021629440.
- [27] Olubanke O. Ogunlana, Babatunde O. Adetuyi, Miracle Rotimi, Iohor Esalomi, Alaba Adeyemi, Julie Akinyemi, Oluseyi Ogunlana, Oluwatosin Adetuyi, Oluseun Adebisi, Edward Okpata, Roua Baty, Gaber Batiha (2021). Hypoglycemic Activities of Ethanol Seed Extract of *Hunteria umbellata* (Hallier F.) on Streptozotocin-induced Diabetic Rats. *Clinical Phytoscience* 7 (1), 1-9 doi: 10.1186/s40816-021-00285-1
- [28] Paula-Peace O James-Okoro, Franklyn N Iheagwam, Mariam I Sholeye, Itoorobong A Umoren, Babatunde O Adetuyi, Adebanye E Ogundipe, Adefoye A Braimah, Tobi S Adekunbi, Oluseyi E Ogunlana, Olubanke O Ogunlana (2021). Phytochemical and in vitro antioxidant assessment of Yoyo bitters *World News of Natural Sciences* 37:1-17
- [29] Olubanke O Ogunlana, Babatunde O Adetuyi, Elohor F Esalomi, Miracle I Rotimi, Jacob O Popoola, Oluseyi E Ogunlana, Oluwatosin A Adetuyi (2021). Antidiabetic and Antioxidant Activities of the Twigs of *Andrographis paniculata* on Streptozotocin-Induced Diabetic Male Rats. *BioChem* 1(3):238-249 <https://doi.org/10.3390/biochem1030017>
- [30] BO Adetuyi, GO Odine, PA Olajide, OA Adetuyi, OO Atanda, JK Oloke (2022) Nutraceuticals: role in metabolic disease, prevention and treatment, *World News of Natural Sciences* 42, 1-27
- [31] N Munir, M Hasnain, H Waqif, BO Adetuyi, C Egbuna, MC Olisah, (2022). Gelling Agents, Micro and Nanogels in Food System Applications. *Application of Nanotechnology in Food Science, Processing and Packaging*, 153-167 https://doi.org/10.1007/978-3-030-98820-3_10
- [32] BO Adetuyi, PF Adebayo, PA Olajide, OO Atanda, JK Oloke (2022). Involvement of Free Radicals in the Ageing of Cutaneous Membrane. *World News of Natural Sciences* 43, 11-37
- [33] Anum Nazir, Nizwa Itrat, Aleena Shahid, Zain Mushtaq, Surajudeen Abiola Abdulrahman, Chukwuebuka Egbuna, Babatunde Oluwafemi Adetuyi, Johra Khan, Chukwuemelie Zedech Uche, Pere-Ebi Yabrade Toloyai (2022). Orange Peel as a Source of Nutraceuticals. *Food and Agricultural Byproducts as Important Source of Valuable Nutraceuticals*. 1st ed. 2022. Springer, Berlin. xxx, 400 p. Gebunden. ISBN 978-3-030-98759-6 https://doi.org/10.1007/978-3-030-98760-2_7