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A mini review on disinfection of corona Virus in histopathology labs

Zubair Luqman

University College of Veterinary & Animal Sciences, The Islamia University of Bahawalpur, Bahawalpur, Pakistan.
Corresponding email: Zubair.luqman@iub.edu.pk

Abstract: Sever acute respiratory syndrome (SARS CoV-2/ COVID-19) is highly contagious deadly virus. Researchers working in histopathology labs, dealing with this virus are more vulnerable whether they have strong immunity level. This review highlighted the biological and physical agents for the inactivation of this virus.
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Key words: SARS CoV, SARS CoV-2, histopathology, mini review; disinfection; corona; Virus

Highly contagious and zoonotic corona virus (COVID-19) was firstly identified in Wuhan China in a person which has history to contact with seafood (Perlman *et. al* 2020). Infectious zoonotic diseases may have many causative agents like bacteria viruses and parasites that prevail between animals and humans (Zhu *et. al* 2019). Sever Acute Respiratory Syndrome/SARS CoV, first reported in Asia 2003. There should be more work done to prove the inactivity of this virus during the histopathological process in labs (Darnell *et. al* 2004). Inactivation of corona virus is the great challenge of researchers like histopathologist which deals with morbid tissue samples. It is reported that inanimate objects of lab can be disinfected by 62-71% ethanol, 0.5% hydrogen peroxide or 0.1% sodium hypochlorite within 1 minute. 0.05 to 0.2% benzalkonium chloride or 0.02% chlorhexidine digluconate were found less effective (Kampf *et.al* 2020). It is 75 to 80% identical to the SARS-CoV, its main transmission occurred by large droplets, inanimate objects and highly contagious in nature so the surroundings dealing with coronavirus should be disinfected with surface biological disinfectants like alcohol (Perlman *et.al* 2020). Coronavirus have genetic shift and drift property. Therefore, research named that Severe Acute Respiratory Syndrome Corona Virus 2, or SARS-CoV-2 which has similarity with SARS-CoV. Collection and submission of infected sample with coronavirus group to the histopathological laboratories should be according to WHO guidelines (Guarner *et. al* 2020 & Gorbalenya *et. al* 2020). Ultraviolet radiations decreased the population of SARS CoV at a very low level on the culture if applied for 60 minutes (Duan et. al 2003) Fortunately routine histotechnology process inactivate the virus from the processed morbid sample (Henwood *et. al* 2018). Sample preserved in formalin for 24 hours can inactivate the SARS CoV-2. Glutaraldehyde can inactivate the SARS CoV after the incubation for 24-48 hours (Henwood *et.al* 2020). In activity of SARS CoV can be achieved at 56°C for 90 minutes, at 67 °C for 60 minutes and at 75°C for 30 minutes (Duan et. al 2003). Wide range of biological agents should be used for disinfection due its highly contagious nature of SARS CoV. (Henwood et. al 2019).

Histopathological laboratories can deactivate the both SARS CoV and SARS CoV-2 by followings ways:

1. Chemicals like alcohol 70%, 90% and 100% used in tissue processing protocol.
2. Formalin preserved tissue for 24 hours.
3. Heating of tissue during processing.
4. Glutaraldehyde can inactivate the SARS CoV after the incubation for 24-48 hours.
5. 0.5% hydrogen peroxide or 0.1% sodium hypochlorite for 1 minute on inanimate objects.
6. 0.05 to 0.2% benzalkonium chloride or 0.02% chlorhexidine digluconate are effective but on lesser extent inanimate surfaces.
7. Ultraviolet radiations decreased the population of SARS CoV at a very low level on the culture if applied for 60 minutes.

References

1. Darnell ME, Subbarao K, Feinstone SM, et al. Inactivation of the coronavirus that induces severe acute respiratory syndrome, SARS-CoV. J Virol Methods. 2004 Oct 1;121(1):85–91.
2. Duan SM, Zhao XS, Wen RF, et al. Stability of SARS coronavirus in human specimens and environment and its sensitivity to heating and UV irradiation. Biomed Environ Sci. 2003 Sep;16(3):246–255.
3. Gorbalenya AE. Severe acute respiratory syndrome-related coronavirus–The species and its viruses, a statement of theCoronavirus Study Group. bioRxiv. 2020 Jan 1.
4. Guarner J. Three emerging Coronaviruses in two decades the story of SARS, MERS, and now COVID-19. Editorial Am J Clin Pathol. 2020 Feb 13. DOI:10.1093/AJCP/AQAA029.
5. Henwood A. A survival guide for laboratory professionals. Scotts Valley, CA, USA: Amazon Create Space Independent Publishing Platform; 2019. Chapter 18 Disinfection, 149–155.
6. Henwood, A. F. (2020). "Coronavirus disinfection in histopathology." Journal of Histotechnology: 1-3.
7. Henwood AF. Ebola and histotechnologists. J Histotechnology. 2018 Apr 3;41(2):71–73.
8. Kampf G, Todt D, Pfaender S, et al. Persistence of coronaviruses on inanimate surfaces and its inactivation with biocidal agents. J Hosp Infect. 2020. DOI:10.1016/j.jhin.2020.01.022.
9. Perlman S. Another decade, another coronavirus. N Engl J Med. 2020 Jan 24;382:760–762.
10. World Health Organization. Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected: interim guidance, 25 January 2020. World Health Organization; 2020, pp 1-5. https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-corona virus-(ncov)-infection-is-suspected-20200125.
11. Zhu N, Zhang D, Wang W, et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med. Feb 20, 2019. 382:727–733. DOI:10.1056/NEJMoa2001017.

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