

Salivary Glands: Potential Reservoirs for COVID-19 Asymptomatic Infection

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J. Xu¹, Y. Li¹, F. Gan¹, Y. Du¹, and Y. Yao¹ **Keywords:** saliva, infectious disease(s), expression of ACE2, asymptomatic patients, minor salivary glands, COVID-19 transmission

According to a latest report on coronavirus disease 2019 (COVID-19), authors had drawn attention to dental risk, in which asymptomatic patients had been mentioned many times (Meng et al. 2020). Previously, researchers have shown the role of oral mucosa in COVID-19 infection (Xu, Zhong, et al. 2020). We would like to draw attention to salivary glands in the epidemic process of asymptomatic infections.

ACE2 is an important receptor for COVID-19 (Xu, Chen, et al. 2020). In a previous study about severe acute respiratory syndrome–coronavirus (SARS-CoV), salivary gland epithelial cells with high expression of ACE2 were infected (Liu et al. 2011). We analyzed the expression of ACE2 in human organs in the GTEx portal (<https://www.gtexportal.org/home/gene/ACE2#geneExpression>). The expression of ACE2 in minor salivary glands was higher than that in lungs (lung medium PTM [transcripts per kilobase of exonmodel per Million mapped reads] = 1.010, minor salivary gland medium PTM = 2.013), which suggests salivary glands could be potential target for COVID-19. In addition, SARS-CoV RNA can be detected in saliva before lung lesions appear (Wang et al. 2004). This may explain the presence of asymptomatic infections. For SARS-CoV, the salivary gland could be a major source of the virus in saliva (Liu et al. 2011). The positive rate of COVID-19 in patients' saliva can reach 91.7%, and saliva samples can also cultivate the live virus (To et al. 2020). This suggests that COVID-19 transmitted by asymptomatic infection may originate from infected saliva.

Therefore, the cause of asymptomatic infection might be from salivary glands. We should not ignore the potential infectivity of saliva alone.

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