Transmission of SARS-CoV-2 via fomite, especially cold chain, should not be ignored

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In PNAS, Taylor et al. (1) show that livestock-processing plants are closely associated with local community transmission of COVID-19. Moreover, Pastorino et al. (2), as well as reports from China recently, demonstrated that fomite transmission, especially cold-chain products contaminated with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), acts as vectors for the transmission of COVID-19.

As reported, respiratory droplet, airborne, direct-contact, animal-to-human, and human-to-animal transmissions represent major spread routes of SARS-CoV-2 (3, 4). Patients (symptomatic or asymptomatic) can emit SARS-CoV-2 into the environment by sneezing, sweating, skin contact, etc. (3, 5, 6), resulting in contamination of the surrounding environment or items. The half-life of SARS-CoV-2 on plastic and stainless steel is about 6 h (2, 3, 5). SARS-CoV-2 was stable on the skin for at least 96 h at 22 °C, 8 h at 37 °C, and 14 d at 4 °C (7). Moreover, the virus can be isolated from aerosols 3 h after infection and from various surfaces (such as glass, stainless steel, paper, and bank notes) 72 h later or even up to 28 d at 20 °C (3, 5, 8). Notably, the virus is highly stable at low temperatures (7). Therefore, it can stay on the surface of cold-chain products or their packaging for a longer time, and be transferred from one place to another by transportation. In the past few months, China has reported several infections, especially asymptomatic infections, caused by imported cold-chain products in Qingdao, Dalian, Tianjin, Beijing, etc. (http://www.chinacdc.cn/). It is worth noting that the live virus was detected and isolated from the positive samples of imported cold-chain packaging in Qingdao, China. These reports further confirm that SARS-CoV-2 can be spread to all parts of the world through trade, especially through cold-chain transportation. Therefore, livestock plants and cold-chain industries should not be neglected for controlling COVID-19. As suggested by Taylor et al. (1), supervision of meat packaging and scattered small-scale meat production may be beneficial to disease prevention and control. Furthermore, the environment of the livestock plants and the cold-chain industry should be tested and disinfected regularly, and the imported cold-chain products and their packaging should be sampled and tested to find the contaminated product in time. In addition, employees should wear personal protective equipment such as masks and gloves when contacting frozen imported products, because wearing a mask seems to be a cost-effective means to fight COVID-19 (9). Meanwhile, employees should also be screened for the positive nucleic acid of SARS-CoV-2 to find the infected persons and control the epidemic situation at the early stage. Besides, disinfection and wet wiping can effectively eliminate SARS-CoV-2 on contaminated plastic packaging and food, especially when using wipes soaked with specific disinfectants (10). Finally, due to the rapid increase in confirmed cases and deaths caused by COVID-19, we strongly recommend wearing masks, keeping social distance, and reducing gatherings.

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