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Cyclosporine: an old weapon in the fight against coronaviruses

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Cyclosporine inhibits the replication of coronaviruses and could potentially suppress the cytokine storm associated with coronavirus infections <https://bit.ly/39x2PSt>

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Coronaviruses have been known to cause respiratory infections in humans and intestinal infections in other mammals. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes coronavirus disease 2019 (COVID-19), is the seventh virus of the *Coronaviridae* family that is known to infect humans. Until 2002, four Coronaviruses infecting humans were described (HCoV-NL63, HCoV-229E, HCoV-OC43 and HKU1). These viruses caused only mild respiratory diseases in immunocompetent hosts. Since 2002, three highly pathogenic viruses from this family have been identified. SARS-CoV (also referred to as SARS-CoV-1) is an enveloped, positive-sense, single-stranded RNA virus which infects the epithelial cells within the lungs. The virus enters the host cell by binding to angiotensin-converting enzyme 2 (ACE2) [1]. It infects humans, bats and palm civets [1]. It emerged in 2002–2003 with an approximate 10% mortality but limited transmissibility (approximately 8100 cases, $R_0 < 1$) [2–5]. Infected persons develop influenza-like symptoms which may progress to pneumonia, acute respiratory distress syndrome (ARDS) and death from respiratory failure and multi-organ failure. Middle East respiratory syndrome coronavirus (MERS-CoV) emerged in 2012 in Saudi Arabia and was the second highly pathogenic virus of this family [6], yet with relatively low rate of transmission. MERS-CoV had even higher mortality than SARS-CoV (30%), but again was characterised by low transmissibility (approximately 2500 cases since 2012, $R_0 < 1$) [6]. Typical MERS symptoms include fever, cough and shortness of breath. Pneumonia is common, but not always present. Gastrointestinal symptoms, including diarrhoea, have also been reported. Some laboratory-confirmed cases of MERS-CoV infection are reported as asymptomatic. Most of these asymptomatic cases have been detected following aggressive contact tracing of a laboratory-confirmed case. Dromedary camels are a major reservoir host for this virus.