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IN VITRO ASSAYS FOR GOLD PHOSPHINE, ILLUDALIC ACID, AND PHENYLARSONIC ACID INHIBITION OF SARS-COV-2 PAPAIN-LIKE PROTEASE

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ABSTRACT

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has had an extensive global health impact and continues to more than a year after coronavirus disease 2019 (COVID-19) has been deemed a global pandemic [1], [2]. Coronaviruses in humans have been documented as early as 1965 and continued understanding of these strains, along with viable small molecule enzyme inhibitors, can promote not only vaccinations, but therapeutics to treat those infected [3]. The aim of this project was to identify inhibitors for PLpro, one of two proteases within COVID-19. This enzyme is primarily responsible for the mechanisms within the cell cycle, allowing the virus to replicate [4]. Further, the development of new enzymatic small molecule inhibitors will allow for better understanding of mechanisms involved within vital processes of COVID-19 and open the door for future, more potent, therapeutics. Our results show that several compounds of illudalic acid derivates, along with gold phosphine derivatives, successful inhibit the activities of PLpro *in vitro*.

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