INPLASY PROTOCOL

To cite: Wu et al. Comprehensive evaluation the efficacy and safety of LPV/r drugs against SARS, MERS or COVID-19: Meta-analysis. Inplasy protocol 202080007. doi: 10.37766/inplasy2020.8.0007

Received: 04 August 2020

Published: 04 August 2020

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Support: **China Scholarship Council.**

Review Stage at time of this submission: **Data extraction.**

Conflicts of interest:
There is no conflicts of interest.

Comprehensive evaluation the efficacy and safety of LPV/r drugs against SARS, MERS or COVID-19: Meta-analysis

Wu, LS[1]; Li, XQ[2].

Review question / Objective: **The efficacy of LPV/r in the treatment of SARS, MERS and COVID-19 patients is significantly better than that of the control group. Furthermore, the incidence of adverse events has not increased significantly. LPV/r drug is extremely effective in the treatment of anti-COVID-19 virus and the application prospect is worthy of further study.**

Condition being studied: **Patients with positive nucleic acid tests for SARS, MERS and COVID-19.**

Information sources: **Search PubMed, Embase, China Knowledge Network (CNKI), The Cochrane Library, WangFang DATA, China Biomedical Literature Database (CBM) and other databases for all relevant LPV/r treatments of severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) literature and review the references included in the literature.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 04 August 2020 and was last updated on 04 August 2020 (registration number INPLASY202080007).

INTRODUCTION

Review question / Objective: **The efficacy of LPV/r in the treatment of SARS, MERS and COVID-19 patients is significantly better than that of the control group. Furthermore, the incidence of adverse events has not increased significantly. LPV/r drug is extremely effective in the treatment of anti-COVID-19 virus and the application prospect is worthy of further study.**

Condition being studied: **Patients with positive nucleic acid tests for SARS, MERS and COVID-19.**

METHODS

Participant or population: **patients with positive nucleic acid tests for SARS, MERS and COVID-19.**

Intervention: Use LPV/r for antiviral therapy.

Comparator: Use other antiviral drugs or not use LPV/r for antiviral therapy.

Study designs to be included: Randomized controlled trials (RCT), cohort research, case-control study.

Eligibility criteria: Completed clinical trials.

Information sources: Search PubMed, Embase, China Knowledge Network (CNKI), The Cochrane Library, WangFang DATA, China Biomedical Literature Database (CBM) and other databases for all relevant LPV/r treatments of severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) literature and review the references included in the literature.

Main outcome(s): Virus nucleic acid conversion rate, chest CT improvement rate, virus clearance rate, mortality rate and incidence of adverse events (AE), etc.

Quality assessment / Risk of bias analysis: Two investigators independently evaluated the quality of the trial and extracted data. According to the standards in the Cochrane Systematic Evaluation and Intervention Manual, the quality of the trial was evaluated from the following aspects, including selection bias, implementation bias, measurement bias, follow-up bias, reporting bias and other potential sources of bias. The extracted content is as follows: Basic information of the article such as author and publication year; Research design: treatment path, treatment plan, number of patients in each group, administration method, dominant race, etc; Observation results: viral nucleic acid conversion rate, chest Data indicators, CT improvement rate, virus clearance rate and mortality rate and 95% CI, OR, RR and AE incidence. The two researchers will discuss and resolve their differences. If they cannot reach an agreement, the third researcher will make a decision.

Strategy of data synthesis: The two researchers independently conducted systematic computer searches on the PubMed, Cochrane Library, EMBASE and clinical trail registry platforms (http://clinicaltrials.gov/ and http://www.chictr.org.cn/) Trials from the establishment of the database to July 2020. The document language is limited to English and Chinese. Set the search keyword as follows: ("COVID-19" OR "SARS-CoV-2"OR"SARS-Cov"OR"MERS-Cov") AND ("Lopinavir-Ritonavir" OR "LPV/r"). Document types include randomized controlled trial (RCT), cohort studies, case-control studies, etc. The references of included studies and review articles are also traced to determine more relevant studies.

Subgroup analysis: SARS, MERS and COVID-19.

Sensibility analysis: When I2 >50%, the heterogeneity is considered significant and the random effects model is used for analysis, otherwise the fixed effects model is used. Use subgroup analysis to investigate possible sources of heterogeneity: dominant race, administration method and treatment route. If the heterogeneity cannot be eliminated by subgroup analysis, a sensitivity analysis will be performed to further determine the source of the heterogeneity. All P values are two-sided tests. P <0.05 is considered statistically significant.

Country(ies) involved: Korea, China, Saudi Arabia.

Keywords: COVID-19; SARS; MERS; LPV/r ; Antiviral therapy; Meta-analysis.

Contributions of each author:
Author 1 - Liusheng Wu - Author 1 drafted the manuscript and provided the idea.
Author 2 - Xiaoqiang Li - The author provided statistical expertise and guidance.