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EDITORIAL

Battling against the Coronavirus Disease 2019

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In consistence with the core domain of INNOSC Theranostics and Pharmacological Sciences, we continued to focus on the publication of articles pertaining to the topic of “therapeutic and diagnosis” in Volume 3 Issue 2. Particularly, at this trying time when the whole world is battling against one of the worst pandemics we have ever seen, three out of the four full-length articles were published, describing research about the coronavirus disease 2019 (COVID-19).

In the first article entitled “*In Silico* Study of Curcumin and Folic Acid as Potent Inhibitors of Human Transmembrane Protease Serine 2 in the Treatment of COVID-19,” Motohashi *et al.* demonstrated the inhibitory activities of curcumin and folic acid, along with those of the known human serine protease inhibitors such as nafamostat and camostat, on human transmembrane protease 2 (TMPRSS2) protein, which is essential for priming spike protein of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in association with human angiotensin-converting enzyme 2 (ACE2) surface receptor to facilitate viral invasion into host human cell through ACE2 receptor [1]. In this study, curcumin and folic acid, along with nafamostat and camostat, were docked on a modeled human TMPRSS2 protein 3D structure. Based on this *in silico* analysis, nafamostat and curcumin interactions with targeted TMPRSS2 protein were identical, whereas camostat and folic acid displayed similar interactions.

In the second article entitled “Epidemiological Model for COVID-19 in China,” Wu *et al.* studied the epidemic of COVID-19 from specific areas of China and nationwide region using a mathematical model [2]. The obtained fitting curve of the Hubei group showed a parabola with a peak on February 18, 2020, with 51,673 cases and the gradual decrease of infected patients, which culminates with a downhill after May 2020. During early outbreak, the highest recorded R_0 was 6.13, which declined gradually forming a S-type curve, and it approached zero in early May. Similar to Hubei group, the fitting curve of the nationwide without Hubei group also showed a parabola,

recording a peak of 9145 cases on February 10, 2020. At first, its R_0 was as high as 2.35 but declined to zero in early April. The epidemic in the Henan group also reached its peak on February 10, 2020, and ended in early April as well. This model provides an insight into how to strategize for epidemic control.

The third article is a systematic review by Mendonça *et al.*, delineating the identification of the additional services that community pharmacies are providing during the COVID-19 pandemic [3]. Authors used the databases, such as PubMed, Web of Science, and ScienceDirect to look for relevant articles between December 2019 and April 2020, using “Community Pharmacy,” “Services,” “COVID-19,” “Coronavirus,” and “Pandemic” as the keywords. In this article, the authors pointed out the unique services of the community pharmacies that help alleviate the burdens on other health-care institutes.

In the last article entitled “Skin Ultrasound as a Diagnostic Approach for Non-melanocytic Benign Skin Tumors” which is irrelevant to COVID-19, Del Prado *et al.* evaluated the validity and diagnostic safety of high-frequency ultrasound as a diagnostic test for non-melanocytic benign skin tumor detection [4]. The specific objectives were to measure the sensitivity and specificity of ultrasound as a measure of the validity relative to the gold standard test – diagnostic-therapeutic biopsy. Based on the obtained results, the skin ultrasound has a sensitivity and specificity of 93% and 88%, respectively. Furthermore, the positive and negative predictive values of using skin ultrasound are 84% and 94%, respectively.

In this issue, three COVID-19-related articles highlight different aspects – drug discovery, epidemiology, and pharmacy services – of the infectious disease behind the current pandemic. Given that the pandemic shows no signs of decline and the vaccines do not essentially confer complete immunity against the coronavirus, further studies on this topic are still required to shed light on epidemic control strategies and innovative approaches to diagnosis, treatments, and complementary services that could alleviate the overwhelming health-care burdens we are shouldering right now.

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