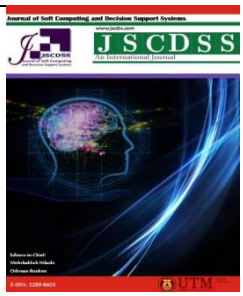
An International Journal
JSCDSS
http://www.jscdss.com
Vol.9 No.2 February 2022: 1-10
Article history:
Accepted 20 June 2022
Published online 21 July 2022

Journal of Soft Computing and Decision Support Systems



E-ISSN: 2289-8603

Revealing the Effectiveness of Turmeric for COVID-19 through Analysis of Consumer' Reviews Using Clustering, Text Mining and Deep Learning

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Abstract

Understanding COVID-19's nature along with clinical features will be essential in dealing with the outbreak of this virus. As the immune response of COVID-19 patients is found to be similar to the immune response of patients with MERS and SARS, those Complementary and Alternative Medicines (CAMs) are potential sources of bioactive compounds with antimicrobial activity can be beneficial in the prevention and treatment of COVID-19 virus infection. This paper investigates the role of curcumin, as an active component of the spice turmeric, in infectious diseases such as COVID-19. In addition, this paper provides some results from the WebMD data for the consumers' satisfaction of turmeric consumption. The data analysis is performed using clustering, text mining and prediction techniques. The results show that the majority of consumers find turmeric as a useful CAM in improving their general health and well-being. Overall, the advantages of turmeric to infectious disease in the early stage of infection for prevention and treatment need additional evaluation. Nevertheless, because some clinical studies show turmeric effectiveness in infectious disease prevention and treatment, further clinical and consumer analysis should be conducted to reach robust conclusion on the benefit of turmeric beneficial for COVID-19 treatment. The outcome of this paper demonstrates the health benefits of turmeric and its effectiveness in immune system enhancement and protection against infectious diseases.

Keywords: Curcumin, Turmeric, COVID-19, Immune Response, Consumer Experience, Clustering, Text Mining

1. Introduction

Coronavirus is an enveloped RNA virus (Cao et al., 2015; Du et al., 2020; Rhodes et al., 2020; Rosa and Santos, 2020) whose distribution among mammals such as humans and birds is extensive and significantly fast, with resulting respiratory, enteric, hepatic, as well as neurologic complications (Huang et al., 2020; Li et al., 2020; Zhu et al., 2020). This virus was incorporated to the diseases list by World Health Organization (WHO) in its 2018 yearly review of the Priority Diseases Blueprint List.

COVID-19 which is an official name for a respiratory infection caused by a 2019 new coronavirus started first in Wuhan, China and widely spread worldwide (Abumalloh et al., 2021b; Asadi et al., 2022; Kavanagh, 2020; Rupani et al., 2020; Wu et al., 2020; Zhu et al., 2020). According to World Health Organization (WHO), the new coronavirus or COVID-19 is a major global epidemic (Ahani and Nilashi, 2020; Nilashi et al., 2022a; Nilashi et al., 2022c; Nilashi et al., 2021d; Nilashi et al., 2021e; Zheng et al., 2020; Zibarzani et al., 2022). National and international spread of the disease has threatened people's lives all around the world since then (Abumalloh et al., 2021a; Nilashi et al., 2021a; Nilashi et al., 2021b; Nilashi et al., 2022b; Nilashi, Mehrbakhsh et al., 2020b; Nilashi et al., 2021f; Wu et al., 2020). COVID-19 infection has caused SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) (Prompetchara et al., 2020; Zheng et al., 2020). SARS-CoV-2 is a beta-coronavirus (Naveja et al., 2020).

Understanding COVID-19 nature along with clinical features will be essential in dealing with the outbreak of this virus (Hassan et al., 2020; Liu et al., 2020; Nilashi, Mebaksh et al., 2020; Nilashi, Mehrbakhsh et al., 2020c; Shereen et al., 2020; Taheri et al., 2021). As immune response of the patients with COVID-19 is found to be similar to the immune response of patients with other infection diseases such as MERS and SARS, the Complementary and Alternative Medicines (CAMs) which are potential sources of bioactive compounds with antimicrobial activity may be helpful in the prevention and treatment of COVID-19 virus infection. To understand how they may be beneficial to the new outbreak, it is important