Environmental Science : An Indian Journal

ISSN: 0974-7451

Short Communication | Vol 17 Iss S1

Studying Plant-Microbe interactions by CRISPR tool and its effect on Crop-Yield

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Abstract

Statement of the problem: The Coronavirus (COVID-19) epidemic has impacted peopleâ??s health and health-related importance of life. In addition to non- pharmaceutical interventions, nutrition, and other lifestyle measures influence immune strength and susceptibility to infectious disease. Since the outbreak, there has been no vaccine or specific antiviral medication or clinically approved drug so based on the contribution of past traditional medicine (ethnomedicine) and immune-based therapy as a treatment in critical pathogen outbreaks, we aim the potential use of medicinal and aromatic plants in enhancing immunity as a preventive solution. Methodology & Theoretical Orientation: This paper focuses on the antiviral potential of medicinal plants against coronavirus disease as they are enhanced with diverse phytochemicals through highly active secondary metabolites that can interrupt the replication of several highly pathogenic viruses. The main focus of researchers around the world is designing and identifying inhibitors against all possible viral key protein targets with one of the drug target guanine-N7 methyltransferase which plays a key role in capping the 5Í´-ends of viral genomic RNA and sub-genomic RNAs to escape host innate immunity. The various computational approach used are homology modeling, protein and ligand preparation, Substrate docking, Molecular docking, High throughput virtual screening, and Molecular dynamics simulation. Findings: A combination of all these computational approaches provides the screened compounds that readily interact with the G3A binding site of the homology modeled N7-MTase domain and will have strong potency towards inhibiting the substrate binding and efficiently hinder the capping mechanism thus making the final compounds COVID-19 therapeutics. Conclusion & Significance: The anti-viral phytochemicals target N7-MTase inhibiting SARS-CoV-2 with the ability of RNA capping mechanism and the failure of which leads to viral RNA degradation, eventually hindering the replication cycle thereby curing COVID-19.

Citation: Ruby Bhullar Garcha. Studying Plant-Microbe interactions by CRISPR tool and its effect on Crop-Yield, J Environ Sci. 2021; 17(S1):07