

Apoptotic Effect of Pesticides in Mitochondrial Mediated Cellular Dysfunction: *In silico* Investigation †

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† Presented at Virtual symposium to observe World Antimicrobial Awareness week “Applications of biotechnology and microbiology with special emphasis on Antimicrobial resistance”, 18-24 November 2020, Chennai, India

Received: 10.11.2020; Revised: 15.11.2020; Accepted: 17.11.2020; Published: 10.01.2021

Abstract: In the immune system, apoptosis is highly required for lymphocyte development and homeostasis. Dysregulation of apoptosis leads to various immune disorders such as immunodeficiency, allergies, autoimmune disorders, etc. Apoptosis is considered a main component of the different processes, including normal cell turnover, development and functioning of the immune system, and many others. Pesticides are widely used in agriculture throughout the world as fungicides and insecticides, and increasing exposure to these pesticides will significantly affect the immune system in humans, causing impairment. Hence major investigation on the apoptotic effect of pesticides in the neuronal system in the *In silico* docking studies IMIDA (Imidacloprid) and PENDING (Pendimethalin) shows the minimum binding energy and inhibition constant with the target protein was successfully docked and possible binding modes of this protein with ligand were analyzed and Results of each protein-ligand interaction are analyzed based on their binding energy along with the formation of hydrogen bond and are elaborated.

Keywords: apoptotic; pesticides; IMIDA; PENDING; neuronal system; binding energy; inhibition constant; *In silico* docking studies.

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Funding

This research received no external funding.

Acknowledgments

This research has no acknowledgment.

Conflicts of Interest

The authors declare no conflict of interest.