

# Cytokinins from Plant to Human <sup>†</sup>

Eman M. Othman <sup>1,2,\*</sup>, Muhammed Naseem <sup>3</sup> and Thomas Dandekar <sup>1,\*</sup>

<sup>1</sup> Department of Bioinformatics, Biocenter, University of Würzburg, Am Hubland, 97074 Würzburg, Germany

<sup>2</sup> Department of Biochemistry, Faculty of Pharmacy, University of Minia, Minia 61519, Egypt

<sup>3</sup> Department of Life and Environmental Sciences, College of Natural and Health Sciences, Zayed University, Dubai PO Box 4783, United Arab Emirates; muhammad.naseem@zu.ac.ae

\* Correspondence: eman@toxi.uni-wuerzburg.de (E.M.O.); email1@gmail.com (T.D.)

† Presented at the 2nd International Electronic Conference on Nutrients, 15–31 March 2022; Available online: <https://iecn2022.sciforum.net/>.

**Citation:** Othman, E.M.; Naseem, M.; Dandekar, T. Cytokinins from Plant to Human. *Proceedings* **2022**, *69*, x. <https://doi.org/10.3390/xxxxx>

Academic Editor(s): David Nieman

Published: 14 March 2022

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2022 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

**Abstract:** The plant hormones cytokinins; play a major role in cell division and cell differentiation and affect organogenesis in plant cell cultures and contribute in many other physiological and developmental processes in plants 60 years ago, was the first discovery of kinetin, the first known member of cytokinines. In market, kinetin is formulated as cosmetic anti-aging topical preparations, without defined dose or mechanism of actions, and till now no systemic formulations with specific dose and mechanism were produced. Some studies reported the effect of kinetin on different human diseases, such as its ability to prevent age-related changes in human skin by protecting the DNA in skin cells from damage (antioxidant effects) and decreasing skin water loss and its therapeutic potential in treatment of the human splicing disease familial dysautonomia in vitro. Our research with kinetin started from studying of its activity in the plants, followed by first screening for the systemic activity of kinetin in mammalian cells at the level of the in vitro study, where we showed for the first time that kinetin exerts anticytotoxic, antioxidant, antigenotoxic and antiapoptotic activities in different cell lines from different origins. The promising in vitro results transferred us to the in vivo stage of the investigations, where we examined the safety of the kinetin for the systemic administration in rats.

**Keywords:** plant hormone; kinetin; antioxidant; systemic activity