

high doses of vitamin E, this combination offers significant health benefits by protecting a diverse range of target proteins from proteasomal degradation. Notably, this nutrigenomic effect partially restored cellular redox homeostasis, even in older individuals, who typically exhibit weakened responsiveness in the Keap1-Nrf2 signaling system, albeit to a minor extent. These findings align with previous research by Gounder et al. [82] and Baar et al. [83]. A health-driven dietary approach remains a cornerstone of health strategies, providing direct benefits for healthy individuals and collateral advantages for those with health complications [84]. Furthermore, rigorous studies on functional foods and their novel mechanisms strategically advance our understanding [85-90].

Conflict of interest statement: The authors declare that they have no known competing financial interests that could influence the work reported in this paper.

Abbreviations: PBMCs: Peripheral Blood Mononuclear Cells; FPP[®]: Fermented Papaya Preparation; BMI: Body Mass Index; HO-1 Heme oxygenase-1; NQO1 NAD(P)H dehydrogenase (quinone 1); Nrf2 - Nuclear factor erythroid 2-related factor 2; ARE - antioxidant response elements.

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