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A safety net: Novel natural-product based drug discovery design as a viable solution to the on-market natural nutrition products that possess pro-cancer qualities

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With supplement and nutraceutical trust and consumption at a record high with a rise in >103 countries, an alarming public health crisis is emerging. Even in Europe where regulation is considered to be the strictest, these products do not require authorization. In the U.S., product potency and purity are not cleared by the FDA and it is voluntary for companies to report adverse effects. The present study assessed youth behaviors to marketed nutrition products, demonstrated wet-bench research on core compounds in the products (luteolin, resveratrol), and herein for the first time, constructed a viable solution to combat the consequences: a novel design to repurpose dangerous marketed products for drug discovery expedition. Trust and consumption for luteolin (supplements) and resveratrol (nutraceuticals) has dramatically increased. Of particular interest are the growing claims on therapeutic benefits, especially because many youth are purchasing these products as preventative cancer care. Wet-bench research was conducted on luteolin and resveratrol on three cancers (neuroblastoma, lymphoma, and colorectal) through cellular assays, organoid models, flavone combinations, and to qualify the mechanisms, data science and molecular profiling was applied. Results indicate that youth tend to trust natural products, perhaps due to the view that the pharmaceutical industry is problematic. Results demonstrate that luteolin does have therapeutic effects on both cancers likely via mitochondrial matrix 1 yet certain concentrations have significant adverse effects.

Given that 85% of labels neither contain the maximum dose nor dosage amount of each ingredient, this research is a call to action to advocate for reform in the supplement industry and understand that natural does not mean neutral: caution and proactivity are imperative. The conditional benefits of the products can be repurposed into the novel model for drug discovery that is natural-product based.

Biography

Jessie Dong is a student in New York who hopes to major in bioethics and pursue a career that is an intersection between public health policy and translational medicine. She has done extensive research on public health including topics on vaccine hesitancy, water bioremediation, unregulated nutrition products, and the dangerous lack of communication between academia and industry. She has been invited to many research fairs such as Columbia University's Research Symposium, New York State's Science and Engineering Fair, the Regeneron International Science and Engineering Fair, and the International Genius Olympiad. She also pushes for public health policy through her project-based organization PFPH (Push for Public Health) and through working with programs at the T.H. Chan School of Public Health. She is enthusiastic about working with others to alleviate the consequences that public health crises have brought into our world.

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