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What does green tea have to do with fighting germs?

Tea is the second most popular beverage in the world next to water. Benefits of tea polyphenols, especially the polyphenols from unfermented green tea leaves, have been studied extensively. While the antioxidant, anticancer, and anti-inflammatory activities of green tea extracts have been well-documented, the antimicrobial activities of green tea and its extracts were only scientifically investigated in recent years. Many groups around the globe reported promising results regarding the antibacterial and antiviral properties of green tea polyphenols, especially epigallocatechin-3-gallate (EGCG), the most abundant polyphenol from green tea. However, due to the water-soluble and chemically unstable nature of these antioxidant compounds, green tea polyphenols in their original forms are difficult to incorporate into practical products for antimicrobial use, such as topical formulations, disinfectants, and sanitizers. To overcome these obstacles, we have focused on certain modified green tea polyphenols that have lipid-solubility and stable activity against microbes that are resistant to conventional disinfectant methods. We discovered that the lipid-soluble tea polyphenols (LTP) possess potent virucidal activities against many viruses, including alcohol-resistant nonenveloped viruses such as poliovirus and norovirus. Both *In vitro* and clinical studies have demonstrated that LTP, in the form of EGCG-esters, are effective against herpes simplex viruses and related symptoms such as herpes labialis, without adverse effect. These findings lead to recently created topical applications for treating herpes labialis and alcohol-based hand sanitizer formulations containing LTP. We are currently investigating the sporicidal mechanism of LTP to develop strategies of using these nontoxic compounds to better protect populations from microbial infections.

Biography

Stephen Hsu earned his Bachelor's degree from Wuhan University in China, and Master of Arts degree from Montclair State University and PhD degree from the University of Cincinnati. He spent four years at Memorial Sloan-Kettering Cancer Center before joining the Medical College of Georgia (now part of Augusta University). He is well-recognized in translational research and inventions on the benefits of green tea polyphenols, with more than 60 publications. His research is supported by grants from NIH, US Army and other funding agencies. He has been invited to speak at various CE courses, and domestic and international conferences.

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