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Virucidal capacity of novel ProtecTeaV sanitizer formulations containing lipophilic Epigallocatechin-3-Gallate (EGCG)

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Current non-toxic or “generally recognized as safe” (GRAS) countermeasures against viral entry into cells in the human body are often inadequate. The objective of this study was to evaluate a novel alcohol-based instant hand sanitizer formulation containing lipophilic EGCG (derived from green tea extract), in comparison to commonly used hand sanitizers either with or without alcohol. Standard 50% Tissue Culture Infective Dose (TCID₅₀) assay was used for determination of virucidal capacity against poliovirus 1 (PV 1). In addition, neutralization by an ultrafiltration method was used to evaluate the mechanism of virucidal capacity. The results demonstrated that lipophilic EGCG formulations (with and without gelling agent) reduced the TCID₅₀ by a factor of 6 (mean log₁₀-reduction of viral infectivity), 100-fold more than the reduction of viral infectivity (>4 log₁₀) mandated by internationally accepted standards. In addition, the virucidal effect of lipophilic EGCG formulations was associated with direct and irreversible inactivation of PV 1, rather than a reversible inhibition mechanism. In contrast, two commonly used instant hand sanitizers failed to reduce PV 1 viral infectivity by >4 log₁₀. In conclusion, lipophilic EGCG instant hand sanitizer formulations possess effective virucidal capability with the potential for use in novel disinfectant and antiseptic approaches, pending additional research and development.

Biography

Stephen Hsu earned a PhD degree from the University of Cincinnati. He spent four years at Memorial Sloan-Kettering Cancer Center prior to a 4-year career change as a TV sports anchor for ESPN International while taught at the National University of Singapore. He is a tenured Professor at Georgia Regents University and serves as Course Directors for Nutrition and Biochemistry. He published more than 60 research articles and 8 books/book chapters. His contribution in translational studies on the benefits of green tea was recognized with multiple awards such as Georgia Bio Innovation Award and IADR/GSK Innovation in Oral Care Award.

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