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Antiviral activity of phytochemicals using a Norovirus surrogate system

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Noroviruses belonging to family of Caliciviridae have been identified as a major cause of acute gastroenteritis epidemics. In this study, the effect of natural substances including plants extracts, essential oils and essential oil-derived single components were investigated on the infectivity of murine norovirus-1 (MNV-1), a surrogate of human norovirus (huNoV) using plaque reduction assay. MNV-1 at titers of $\sim 5 \log_{10}$ PFU/mL was mixed with natural substances (1 mg/mL or 0.2% v/v), and incubated for 72 h at 4°C. The infectivity of the recovered virus after treatment was evaluated by a number of plaque formations. Among the 100 of tested natural substances, five natural substances exhibited a significant reduction of MNV plaque formation: FSB A; FSB B; FSB C; FSB D; FSB E. MNV plaque formation was decreased >50% with FSB A (64.93%), FSB D (80.17%), and FSB E (75.49%); <50% with FSB B (21.38%) and FSB C (39.73%). These natural substances further exhibited significant reduction of the MNV plaque formation in a dose-dependent manner. Although further studies are necessary to elucidate the mechanism of action of these natural substances, our results suggest phytochemicals and natural substances may help to directly inactivate norovirus particles.

Biography

Sung-Joon Lee completed BA and MA from Seoul National University in the Department of Food Science and Technology and obtained PhD at Harvard University in the Department of Nutrition. After postdoctoral fellowship at Stanford University then started his own laboratory at Korea University in 2004. He is now a professor in the Department of Biotechnology at Korea University. His main research topics include investigation of biological activity and mechanism of phytochemicals in the lipid metabolism and other lipid metabolism related symptoms. He has published more than 100 papers in peer-reviewed journals and has written two textbooks.

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