

Rationale for Quercetin as a potential supplement to increase resistance to COVID-19 infection and to reduce symptoms during recovery?

The potential of herbal medicines to affect outcomes of the novel coronavirus disease, COVID-19, has been much discussed by researchers throughout the pandemic (Brendler et al. 2020). Quercetin (2-(3,4-dihydroxyphenyl)-3,5,7-trihydroxychromen-4-one or 3,3',4',5,7-pentahydroxyflavone) represents one of the best studied flavonoid with numerous health-promoting effects such as antiviral, anti-inflammatory, anticancer, and cardiovascular protective activities (Wang et al. 2016). In particular, the anti-inflammatory capacity of flavonoids in viral diseases—such as that of quercetin—can be of great value for the adjuvant therapy of COVID-19 (Solnier and Fladerer 2020). In some studies, quercetin was found to reduce the release of inflammatory cytokines (e.g., IL-8) which may alleviate infection-related symptoms and suppress overwhelming inflammatory responses that are often associated with severe COVID-19 conditions (McKee et al. 2020; Kinker 2014). Furthermore, the antioxidative effects of quercetin preventing tissue damage by scavenging free radicals (Kinker 2014) might be another benefit for the recovery process of viral diseases like COVID-19. Despite the fact that quercetin exerts a broad range of pharmacological activities including virucidal effects against many different viruses (e.g., herpes simplex (Lee et al. 2017), influenza and parainfluenza type 3 (Wu et al. 2015), its poor pharmacokinetic profile strongly limits its clinical use. For this purpose, several galenic formulations have been introduced to improve the rate of absorption, as well as gastrointestinal solubility of quercetin supplementation. Development of a novel strategy, Quercetin Lipomicel, represents a superior delivery solution to manage insufficient bio-accessibility of quercetin and enhance the bioavailability of the compound. As the bioavailability of quercetin is one of the key limiting factors in its therapeutic use, this innovation could allow the compound to be more clinically effective. Novel carrier designs such as LipoMicel may present a powerful future strategy to circumvent low bioavailability issues of various poorly absorbable plant compounds. However, further research and more sophisticated clinical studies on the efficacy will be needed.

ACKNOWLEDGEMENT

We would like to thank Roland Gahler, Owner of Factors Group of Companies, for the financial support. LipoMicel is a trademark of InovoBiologic, Inc. We thank Kyle Roh, Min Du, and Yun Chai Kuo of ISURA for their contributions to designing the Quercetin LipoMicel study. ISURA is a not-for-profit independent organization.

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