

Elucidation of the molecular basis of antioxidant effects of lactic acid bacteria

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Heat-treated cells of *Lactococcus lactis* strain H61 have been reported to exhibit anti-aging effects on human skin and being considered for application in cosmetics. However, the mechanism of the effects is not clear. I have been studying the antioxidant effects of various dietary phytochemicals using zebrafish as a model animal. In this study, I tried to evaluate the antioxidant effect of *Lactococcus lactis* strain H61 by utilizing zebrafish. As a result, I found that strain H61 exerts its antioxidant effect in zebrafish larvae, in which the relationship between biological effects and genetic mutations is easy to analyze. Using this system, the antioxidant effect of strain H61 was shown to be not mediated by the Nrf2 pathway, which is the master mechanism of cellular antioxidant response. Furthermore, we generated zebrafish mutants that disrupted key genes in the mitochondrial biosynthesis pathway or the innate immune response pathway, paving the way to identify this unknown mechanism.