Bioavailability improvement of alpha-lipoic acid via micro- and nanoparticle

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Alpha-lipoic acid (ALA) is a natural antioxidant material. In recent researches, ALA has been spotlighted as an appetite suppression. However, ALA has a short plasma half-life and low bioavailability. Therefore, to improve the bioavailability, this study investigated the effects of the control of release rate by chemical change (e.g, salt form) or crystal size reduction (e.g, nanoparticulate formulation). From the in vivo release results in simulated gastric fluid, the released rate of nanoparticles showed the exponential decay as a function of disulfide polymer content. From the in vivo test results (abdominal injection), it was proved that the release rate reduced by self polymerization results in the improvement of bioavailability of ALA. Potassium lipoate (salt form, ALA-K) were instantaneously dissolved in pH 6.7 solution. The efficacy of ALA-K salt for the reduction of food intake continued for 2 h. From this consequence, it could be found that the slower the release rate is, the more the bioavailability increases.