Potential hepato-protective effect of α-tocopherol or simvastatin in aged rats

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Abstract:
Background: The effect of α-tocopherol or simvastatin treatment on antioxidant defense in liver of old rats was investigated.
Methods: Endogenous thiobarbituric acid reactive substances (TBARS) and total nitrite/nitrate (NO₂/NO₃) levels as well as non-enzymatic glutathione (GSH) and enzymatic antioxidants (glutathione-S-transferase (GST), superoxide dismutase (SOD), glutathione peroxidase (GPX) and catalase (CAT) activities) were determined in the livers of young (3 months), aged (22 months), α-tocopherol- or simvastatin-treated aged rats. Serum lipid profile and liver function parameters were also assessed in these 4 groups.
Results: Both α-tocopherol and simvastatin almost equally restored the age-induced changes in liver TBARS and CAT activity, serum aspartate aminotransferase (GOT), alanine aminotransferase (GPT) and alkaline phosphatase (ALP). α-Tocopherol, but not simvastatin, tended to restore GST and GPX activities in livers of aged rats. Simvastatin, on the other hand, counteracted age-induced increases in serum cholesterol, TG, LDL, total hepatic NO₂/NO₃ level, and preserved an normal liver function during aging.
Conclusion: Thus, either drug may be beneficial, in spite of a mechanism difference in the antioxidant effect of both of them, in alleviating age-induced liver injury.

Keywords: aging liver, antioxidant enzymes, reactive oxygen species, simvastatin, α-tocopherol